COAL AGE

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Let's Look Forward

Written expressly for COAL AGE
By BERTON BRALEY.

NOW that the old year's almost thru,
Let's start in rightly on the New
With cheerful hearts and faces,
Let's wipe the Old Year from the slate,
With all its woe and war and hate
And all their evil traces;
Let's lift our eyes and gaze ahead
Away from all the past that's dead,
Away from last year's sorrow,
Let us be wise enough to say
"We have forgotten Yesterday,
We're gazing toward Tomorrow."

It's bitter hard to keep your cheer
When through a long and cruel year
You've nearly starved at mining,
When food is high and work is slack
And clouds of gloom are grim and black
And show no silver lining;
And yet these woes of yours and mine
Will not be lighter if we whine,
Grief is a heavy fetter,
So, though things may be looking glum,
Let's smile and take them as they come
And try to make them better!

Let us take heart in spite of dearth,
In spite of war that shakes the earth
It cannot last forever,
With fortitude that will not cease
Let us seek brotherhood and peace
By brave and high endeavor;
Let us resolve that this shall be
A year of progress fine and free,
A good, a kind, a true year,
Let us forget the past that's dead
Lift up our eyes and look ahead
To greet

A Happy New Year!

A Message for 1915

By George Stockdale

AFTER you have addressed your last New Year's card, sit down and address a few resolutions to yourself, but this time don't close the incident with a wish. All your life long you have been hoping that good luck would watch out for you; turn about in 1915 and try to advance yourself; Providence has a bad memory for those who do not help themselves. Fortune does not canvass from door to door—you can be or have as much as your equal if you will labor as hard and manage as well.

There are no limits to the possibility of human will; however, desire is not a creative force. Hope is only an architect—you must build as well as plan. Those who have accomplished the most are not necessarily superior human beings. Man does not perform miracles—he merely achieves practical results through earnest application.

In every community there are a few persons who think clearly, cling to their determinations and persist in their efforts to rise. The tools for success are standard. They belong to rich and poor alike. No sound and whole body enters this world possessed of faculties which Nature did not bestow upon all humanity.

The majority of people make no genuine effort to utilize their advantages to the utmost. They fail to do justice to their natural gifts. They have not even examined their human machine shop. Back of each forehead there is an equipment of lathes, drills, engines and dynamos, which, when properly applied, can perform any task.

Opportunity Still Beckons Us

TIME and again we have complained of lack of chances, when all the while Opportunity has been signaling us, smiling, calling and crooking her finger in our direction every hour of the day. How often have we remarked to our friends that we have thought of a device, an improvement, an enterprise, or an idea, which rendered another man famous or affluent.

We are not handicapped except by our lack of initiative—we aim too low, and tire too easily—our ambitions are commonplace—we lack daring and doggedness.

The common answer to all this is: "My education was neglected; I have been held back by my responsibilities; the openings in the town where I live are very few." Excuses, every one of them. Education is only training, and everybody who can be benefited by a common-school education has a mine of knowledge which can be developed by self-training.

Prosperity doesn't belong in any one spot. It doesn't require a certain soil nor a special climate—it finds fertile ground everywhere. You must uncover your talents before your neighbors can discover them. Form the acquaintance of your latent self. There's a superior being lurking within almost every commonplace human, unable to assert its individuality because its other self won't give it a hearing.

Remove Self-Imposed Limits

DURING the last 12 months you have probably not made one earnest attempt to drag your bigger personality out of its concealment. You accepted conditions as you found them—not that you were not aware that a hundred changes could be made in the very mine where you now work. Time and again you have remarked that some fellow ought to take hold of things and put some spirit into the work. *You* are the man—it is not necessary to look further.

Simply execute the very ideas that you are leaving for an unknown to develop. Nobody can limit your future if you remove your self-imposed limits. Possibilities become probabilities as soon as they are seriously attempted.

Openings do not come ready-made—capability can assert itself in a small mine as quickly as in a large one. Believe in yourself and equip your body and brain to fulfill your aspirations. Live sanely, think fearlessly, and then set about finding a road for your ambition. You can surely survey it; within your own heart persistence and courage will guide to all goals.

No man is greater than his resolutions. Success, like charity, must begin at home. Success does not help those who do not help themselves. The world neither elects nor selects its leaders. It acknowledges their superiority only after the individual has forced his fellows to recognize his strength.

So here's hoping that 1915 brings you to yourself.

A Happy New Year, Mister Bankboss!

By Wesvania

Say, Mister Bankboss, let me salute yer. Me and my buddies has been talking about yer, 'cos we've noticed yer've been terribly glumpy lately, and we sure would like to see yer cheer up a bit.

The place doesn't seem like the same, when yer're looking down yer nose.

We all have a warm feeling for yer, in spite of the little "differings" we have had at various times.

Yer're terrible hard to move at times, and we know that "wild horses" couldn't move yer till yer ready, but all the same, we've seen yer get a battling, hustling swing on, when the real call came!

Yer've got a mighty thick hide too, but we know that yer've a warm heart within yer, fer didn't yer look after Dick Jones' family for a whole month when he was so sick last spring?

And we all know about yer sending out them grocery parcels to some of our poor folks in the camp, when we had that slack run last summer.

Then, by Jinks, we knows yer're nervy, 'cos we minds when we had that big fire in Tom Camp's room, how yer "crep" in on yer hands and knees among all that smoke and heat, and "drug" Tom out to the fresh air.

Say! has the Big Boss been nagging again? We knows yer has a weary time with them office fellers, when things are not going chirpy inside!

Or, maybe, it's that trouble that yer've got at home with yer sick wife and boy, that's worrying yer so much and making yer look so glumpy!

So my buddies says to me, says they, "Let's give the Old Man a bit heartnin' up this New Year—maybe he'll 'preciate it."

So we want's to tell yer, Boss, that we sure would like to see yer cheer up and be more like yer old self again.

We've had lots of tough fights with yer, and we minds how yer "rared round" when we wouldn't "chip in" on that tonnage price yer offered us in the Third East pillars.

And also how yer raised "Cain" with us all when we had that "spat" about the wet places in the Fourth North.

Still we all stand for yer being fair and square—straight up and down—when it comes to making a bargain and keeping it; as well as how yer've given us the "pull" lots of times even when we didn't deserve it.

So cheer up, old feller! *Nix desperashun!!* Let's see that old-time twinkle in yer eye again, and hear that breezy "Howdy" of yours, when we comes up to the shanty of a mornin'.

Give us a handshake, stick out yer chest, straighten up yer back, and shake off that office phantom; then we'll all take a hop, and help yer on with them new resolutions and new efforts which we know yer'll be making this New Year.

Times are hard and things do have a nack of going the wrong way lots of times, but let's throw off our glumpy feelings, and we'll all pull together and help yer to make this the best year we've ever had together.

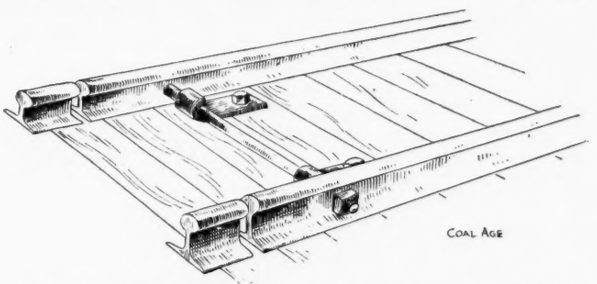
So, Buck up, Boss! and we'll make some of our neighbor chaps look small as Jack Rabbits when they hear tell of the old crew, screwing up the strings of the old mine till she's ringing a better tune than she ever did in her best days.

And if we can be of any further help to yer, why, don't forget to give us the call; so I must now conclude by wishing yer, once again: "A Happy New Year, Mister Bankboss"!

A Remedy for Slipping Rails

By Geo N. Lantz*

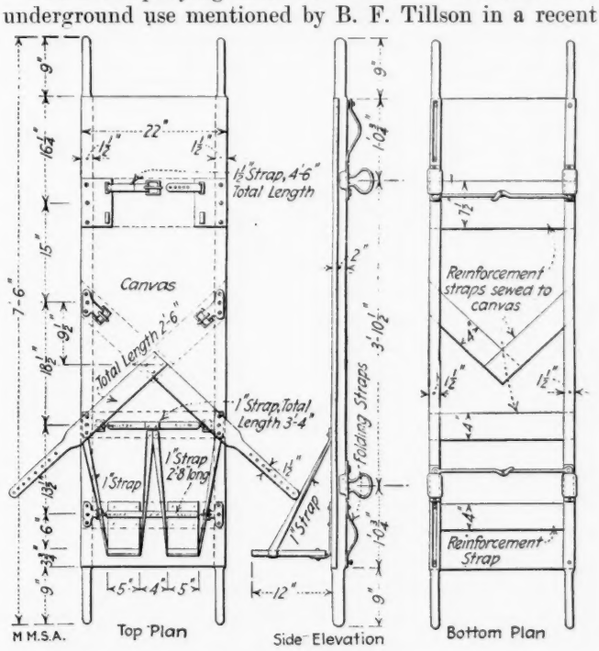
Mining men often experience some difficulty when the rails of the track on the tipple floor slip forward against the dump-rails, or the rails on the scales creep. The accompanying sketch illustrates a remedy for this difficulty.



Run a stiff iron rod through both rails and bolt securely. By means of iron plates—one end curved to fit over the rod and the other end bolted to the tipple floor—the rails may be held in place. The curved plates should be placed as near as possible to the rail, without interfering with the flange of the car-wheel. They may be placed at intervals, if desired, but one set of holders will usually be found sufficient.

Underground Stretcher

The accompanying illustration shows a stretcher for underground use mentioned by B. F. Tillson in a recent



Bulletin of the Mining & Metallurgical Society of America, as employed at the Franklin Furnace mine of the New Jersey Zinc Co.

*New Straitsville, Ohio.

A Visit to European Mines

By Samuel Dean*

SYNOPSIS—Observations at the mines of Germany, France and Belgium. The Germans excel in the matter of systematic planning. Their educational scheme is quite remarkable. It costs about $15,000 to train a modern German mining engineer. Mining methods in Belgium. In the mines of this latter country, $2 per day is big earnings.

All the officials in German factories and mines are "educated." The government of Germany places scientific knowledge, to a certain extent, above militarism. If the young German can produce a certificate showing that he has attained a certain standard of scientific knowledge, or, in other words, passed a severe examination, he is allowed to cut a year off his term of active service. This brings the cavalry term down to two years and the infantry term down to one year. Young men in Germany put forth tremendous efforts to obtain the certificates which shorten their terms of service in the army.

The colliery owners in Germany also are firm believers in education and maintain schools where their aspiring employees are trained. One such school at Bochum near Essen is considered by many to be the finest in the world. It is supported by a levy on the output of what is called the inspection district of Dortmund, which has an area of about 750 sq. miles. This district has an output of 90,000,000 tons of coal a year, and about 375,000 miners are employed.

There are also numerous "preparatory" schools, where instruction is free, and where miners and others are admitted who have been employed in the mines for not less than two years. Attendance at the preparatory schools lasts for two years, eight hours weekly during the first 18 months and 10 hours weekly during the last six months. The subjects taught are German language, arithmetic, geometry, drawing, elementary natural science, and laws relating to coal mining.

The Bochum School

The school at Bochum is for the purpose of training men for the positions of under-officials at mines, both underground and on the surface. Before admittance the applicant must show that he has worked for at least four years underground and that he is a capable workman. Surface employees are compelled to supply proof of their skill as engineers, mechanics, blacksmiths, machinists, etc., and must have had at least four years' practical experience, one of which may have been underground. All applicants are compelled to pass an examination before they are admitted, but this is only to show that they are able to draw a little and have other elementary knowledge.

There are two divisions of instruction, and in the lower division the students attend the school 20 hours each week during the first year and 24 hours per week during the second year; during this time they continue at work in the mines and support themselves. The excellent railroad and tram-car service enables them to travel quickly between the mines and the school, and they may attend classes either during the morning or afternoon. School hours are from 7 a.m to 11 p.m., and from 3:30 p.m. to 7:30 p.m.

In the upper division the student attends school six hours per day, and he often saves sufficient money to keep himself during the time he is away from the mines; some favored or exceptional students, however, receive assistance from the owners of the mines at which they are employed.

Colliery No. 11 at Lens, France

"Koppers" Byproduct Ovens at a French Colliery

Young Men Are Given a Practical Training

The training the students receive is *practical;* that is, they are taught how to take a piece of machinery to pieces and put it together again—the school is equipped with hundreds of models and machines—they are taught how to test ropes, how to test fuels in boiler furnaces, how to analyze gases, and note gas caps on safety lamps in chambers containing known percentages of methane, how to lay track, and do various forms of timbering in a gallery, how to remedy defects in pumping appliances, etc.

And particularly are they taught how to plan and lay out mining operations and surface plants. The German is a great believer in planning things; he likes to see the end of a job on paper before he begins work on it. The minor official and the workman are guided by the blue-

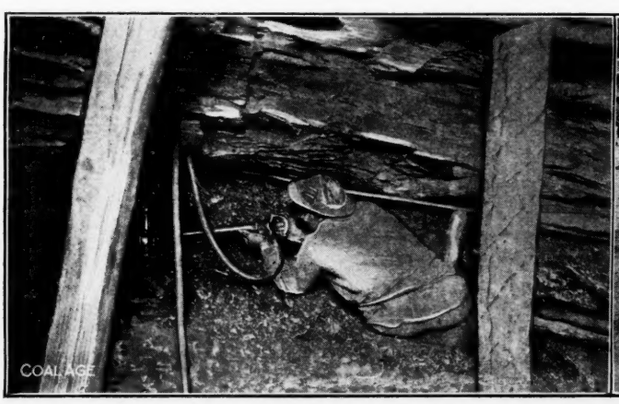
*Delagua, Colo.

print. If they propose to introduce some new method of working, they spend weeks on it in the drawing office before commencing actual operations. If it is found necessary to make some slight change in the haulage arrangements, for instance, they first prepare their plans and work according to the blueprint.

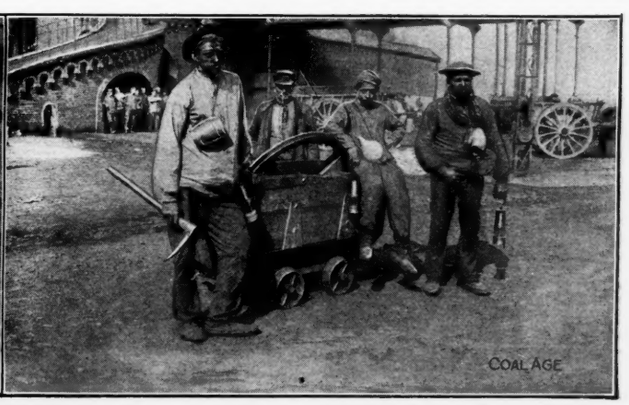
At the Bochum school the students are taught mechanics, machine design, mathematics, drawing, surveying, mining, coal screening, electricity, natural science, mining law, and rescue work.

The students are enabled to quickly acquire knowledge which they might never have an opportunity of obtaining at a mine, or which would probably take many years to grasp without systematic instruction.

For example, there is an excellent large-scale model of a coal-washing plant, complete in every detail; the students could take this apart, build it up again, and go to work washing coal; then they could make a test and see what percentage of coal there was in the residue, and what percentage of moisture and ash there was in the washed coal. So it is all down the line, with all the different appliances connected with coal mining. And bear in mind the student receives all this tuition *gratis*. This partly explains the success of the Germans; they are strong believers in organization and system.



UNDERCUTTING THIN SEAM WITH PNEUMATIC HAMMER



A GROUP OF MINERS AT A COLLIERY IN FRANCE

GERMANS NOT GREATLY INTERESTED IN SPORTS

It also shows a strong determination; the young man who works every day in the mine and puts in four hours' work a day at school is setting himself no trifling task. Naturally few of them know anything about ball games, football, golf, etc., and as I have always been interested, more or less, in such things, I inquired how they managed to maintain health and good physical condition. "Oh, we get our physical culture and gymnastic training when we go for our period of service with the army," they said.

I asked this question also: Is it possible for a miner, in your mines, to rise from the pick to the position of, say manager? They answered reluctantly, No. I then said, Could not an exceptional miner, a man with unusual natural ability, and who had saved money, or who had been provided with money by some benefactor, to enable him to study at the schools—could not such a man rise to the position of manager? They replied that such a man might rise to the top, but said they knew of none having done so in recent years. There were a few old men on the boards of directors of mining companies who in their early years had dug coal.

Then they explained to me the gruelling training which a man goes through who is destined to be a mine inspector, mining engineer, or general manager. Such men do not receive their training at schools like Bochum, but at the mining academies, and universities at Berlin, Aachen, Freiburg, etc., and before a man could enter such a university he must have passed through a high school. So that if he had studied at Bochum it would be necessary for him to go back to the high schools before proceeding to the university, and by that time he might be up in middle life.

THE MAKING OF A MINING ENGINEER

The training of a mining engineer in Germany is about as follows: He starts going to school at the age of 6, and at 18 or 19 he enters the mines and works underground for one year. He then takes his first examination, and, having passed it, starts on another period of four years' training, and then comes his second examination. Having passed that he has another four years' training in front of him, and during this last four years he will serve his one or two years with the army. He is not at the university during the whole of the last two periods, but for two or three months at a time he is at the mines holding generally an official position of minor importance. He then takes his third and final examination; he may pass it, or he may not; if he does not pass he sits again and may be over 30 years of age before he secures his final certificate and is available for a position as inspector of mines for the government, or able to act as manager or mining engineer. After passing his final examination he is given the title of *Bergassessor*.

I was told that it cost as much as $15,000 to train a modern mining engineer, and that he generally speaks English and French in addition to his own language.

A KNOWLEDGE OF FOREIGN LANGUAGES

How very few English-speaking mining men are able to read German and French mining literature. Continental people are a long way ahead of us in this respect, and this calls to mind an incident during my travels. It was "tag day" in Rotterdam one Sunday morning when I was there; the "tags" were in the form of roses, and two maidens, natives of Holland, approached me and fired away in their native tongue. With a shrug of the

shoulders I said I did not speak Dutch. "I'll bet you do," said one of them, and naturally, of course, I bought a rose.

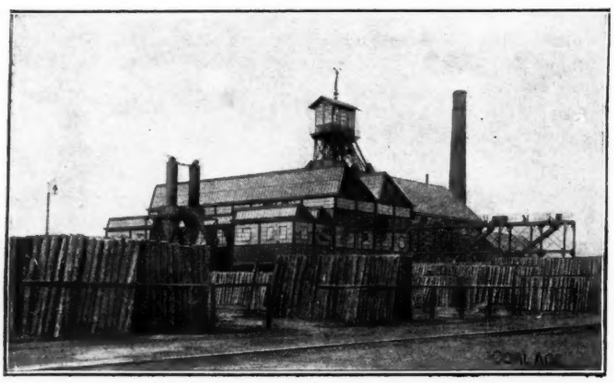
In France many mining engineers and managers speak English and German, especially the younger men. Watteyne, of Belgium, speaks English, as also does his assistant, Lemaire. Taffanel and some of his assistants speak English.

The Mines in France

It was a delightful sojourn in the colliery districts of France. How happy the people appeared to be, and they were unfailingly courteous. One wonders what the country looks like now. Around Lens, where some of the heaviest fighting has taken place, there are collieries as far as the eye can see, and the district all the way up to Lille is thickly populated. Lens is the home town of Taffanel, and was formerly the home of another famous Frenchman, Georges Carpentier, who worked in the pits a few years ago. Lievin, where the experimental gallery is located, is only a few miles away.

Coal Mining in Belgium

In Belgium the shafts are deep, the seams thin, the pitches variable, and often steep. Perhaps there are no



Showing Large Supply of Props Kept on Hand at a French Coal Mine

more gaseous mines anywhere. Sudden outbursts of gas sometimes throw out or dislodge 100 tons of coal. The laws are naturally strict. Shotfiring is not allowed in mines subject to sudden outbursts.

The mines are divided into three classes, viz:

1. Mines where firedamp has once been seen in a safety lamp, but not an explosive mixture.
2. Mines where firedamp is seen frequently.
3. Mines subject to sudden outbursts of explosive gas.

In mines of the first class, shotfiring is allowed in brushing, but not in mining coal. In No. 2 mines, shotfiring is allowed in brushing intakes, but not in returns. In No. 3 mines shotfiring is allowed only in rock tunnels, not in brushing mine ways or in coal.

In the three categories, ventilation must always be ascensional, except in No. 1 mines, where the air can descend, but not along the faces. In 2 and 3 the air must always ascend.

In mines where gas has never been found, shotfiring is allowed in the coal. Black powder is allowed in mines which are not classed, and there is no charge limit on black powder. In classed mines permissible explosives are used exclusively, not by law, but by suggestion. The highest charge limit is 1 lb. 15 oz.; the charge limit varies with different explosives. Only very few shots of any description are fired, however, even in mines where explosive gas is never found. The miners shoot their own shots in nonclassed mines.

A Freedom from Dust Explosions

The volatile mater in Belgian coals is low, not often exceeding 13 per cent. The ash content is high, being from 10 to 25 per cent. And as the seams are thin, there is much brushing which forms incombustible rock dust, and all these conditions probably account for the freedom from dust explosions. The object of the "powers that be" has always been to remove the cause of explosions, or prevent them from starting. The rules regarding safety lamps are severe. They keep track of the number of safety-lamp glasses broken per year at each mine. The inspectors suggest that electric safety lamps should have two thick glasses around the bulb, and that the space between the glasses should be filled with water.

The majority of the seams are only about 1 ft. 6 in. thick, and when it is remembered that shotfiring is not allowed in the coal, it will be seen at once that the pick does the work. Very few coal-cutting machines are employed on account of the pitch of the seams and irregularity of the strata, but some small single hand air punchers are used. A few face conveyors are coming into use, and more such machines may be used in the future.

Where shots are fired, "external tamping" is frequently employed, but not generally. A board is suspended or supported in front of the hole, and on this board is a pile of shale dust. The mines are not treated specially by either watering or stone dusting.

Accidents

The fatal accident rate for years has been low, being about 12 fatalities per year per 10,000 men employed. Roof falls caused 50 to 60 per cent. of the accidents. Systematic timbering is employed only in one or two mines. The roofs are dangerous and timbering costs are high, being over 20c. per ton in many places. The working faces are cross-barred. Back timbers are not withdrawn; the props being short and thin are valueless after being withdrawn; they easily break with the weight.

Benzine locomotives are used only in intakes, but such locomotives are prohibited altogether in mines of the third class. Compressed-air locomotives are used, but not electric locomotives. The gage of the tracks varies, but is generally about 2 ft. The capacity of the mine cars is from 700 to 1000 lb. each.

The total output of coal in Belgium is about 25 million tons, and 100,000 men are employed underground. The mines work on an average 300 days a year. There is one 9½-hour shift for coal hoisting, and one 9½-hour shift for repairs. Prices paid for mining are variable on account of the difference in the hardness of the coal and pressure of the overburden. Miners' earnings average about $1.20 a day; there are some men, of course, who make over $2 per day. The minimum is about $1, but this is not a legal minimum. Company men who do the packing behind the longwall faces receive 80c. to $1 a day. The miners timber their own working places.

There Are Two Labor Unions

There are two unions of miners in Belgium, the Catholic and the Socialist. The majority of the men belong

to the Socialist union. The unions are not recognized by the operators. The general strike of last year lasted only 15 days; it was a political strike for the principle of "one man one vote." Long strikes are unknown.

The government of Belgium is conservative; mine workers are well treated and receive old-age pensions after the age of 55 years.

Coal sells as high as $5 a ton at the mine. The price of patent fuel or briquettes is $3.60 per ton f.o.b. at the mines. There are 2,700,000 tons of briquettes manufactured per year, these being used largely on locomotives on the railroads, and under stationary boilers. They are made from the finest slack or dust; pitch is used as the binder.

The production of byproduct coke is 3,000,000 tons per annum, the price of coke being $4.20 per ton at the ovens.

The deepest coal-mine shaft in Belgium is 4000 ft. deep. The average depth of all mine shafts is about 2200 ft.

(To be Continued)

Extracts from a Superintendent's Diary

Last night I dropped in on the members of our first-aid team while they were assembled for their monthly meeting.

After the regular session was adjourned, some of the men remained behind for an informal talk and the talk became so interesting that I regretted the arrival of midnight with its turning out of all of the camp's electric lights, causing a rush for home.

Many of the points discussed and adventures related had to do with outside camps, as our men have volunteered their services at most of the explosions that have occurred within a radius of 100 miles of our mines, and this fact rather added to the interest of the narratives.

The most interesting discussion had to do with the necessity of the front helmetman of a party dragging a line of some kind along with him. The man who suggested the question once found himself in an entry with another helmetman, and just as they had about reached the face of the heading, they realized that their helmets were defective and they were in the midst of a large amount of blackdamp. The man's buddy began to show the effects of the damp almost immediately by his crazed actions and as he was much the larger man, our narrator hurried out in search of help and other helmets; he feared that should he attempt to lead his companion out, both of them might perish.

He found help and with these rescuers, returned to where he had left his companion. Although but a few minutes had elapsed, the other man had wandered away, and they were so long locating him that he had perished before they found him. If the two had had a rope with them, our man would have tied it around the waist of his companion and they would have had no trouble in following him no matter how much he might have wandered around.

At another time, under almost identical circumstances, except that the two men had a rope with them and the man left behind was tied, the fellow who went in search of help came upon three men without helmets at the mouth of the same entry and although they were afraid to penetrate far into the entry on account of blackdamp they managed to bring the man to them by pulling on his rope.

Another point brought out during the evening, was the terrible risk that helmetmen run, especially in fighting mine fires, where there are no emergency helmets left on top to be used if some of the rescuers inside meet with an accident.

Several instances have occurred where helmetmen have been left to their fate, because no apparatus was at hand to make possible their rescue.

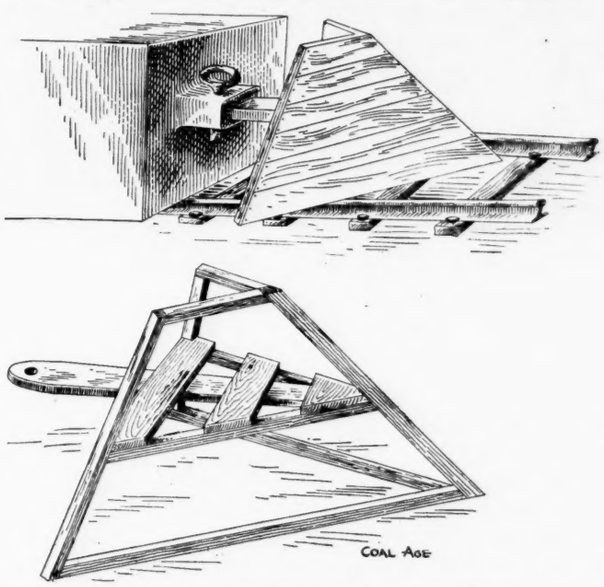
Whenever the talk got too gruesome, some of the fellows would relieve the strain by relating some of the foolish things that some of the others had done while under the influence of gas.

In almost all cases, men crazed by damp tell their companions to leave them and rescue the others and then follow such heroic utterances by foolish talk and singing. Two of our men who have been irreconcilable enemies for some time were made to feel very much ashamed of themselves when told of their actions some months back while both were two-thirds overcome by gas, but filled with heroism.

Our team is considered the best trained squad in the state, and when called to mines where the rescue work seemed to drag, they have sometimes taken the initiative before being urged to do so. This has kindled a little jealousy with outsiders but it has created a get-together spirit within our own squad that comes to the surface whenever our men meet.

A Unique Snow-Plow

The accompanying illustrations show a snow-plow which was used successfully by an Ohio coal company last



SHOWING CONSTRUCTION OF SNOW PLOW

winter. With this device, pushed by the motor, one or two trips accomplish the work, which ordinarily required two or three hours' work for the entire outside force.

A snow-plow of this sort should be made of heavy material, and the pole should be large enough to entirely fill the opening in the bumper of the motor, thus insuring rigidity.

Bunker Coal at Panama

By James Steelman

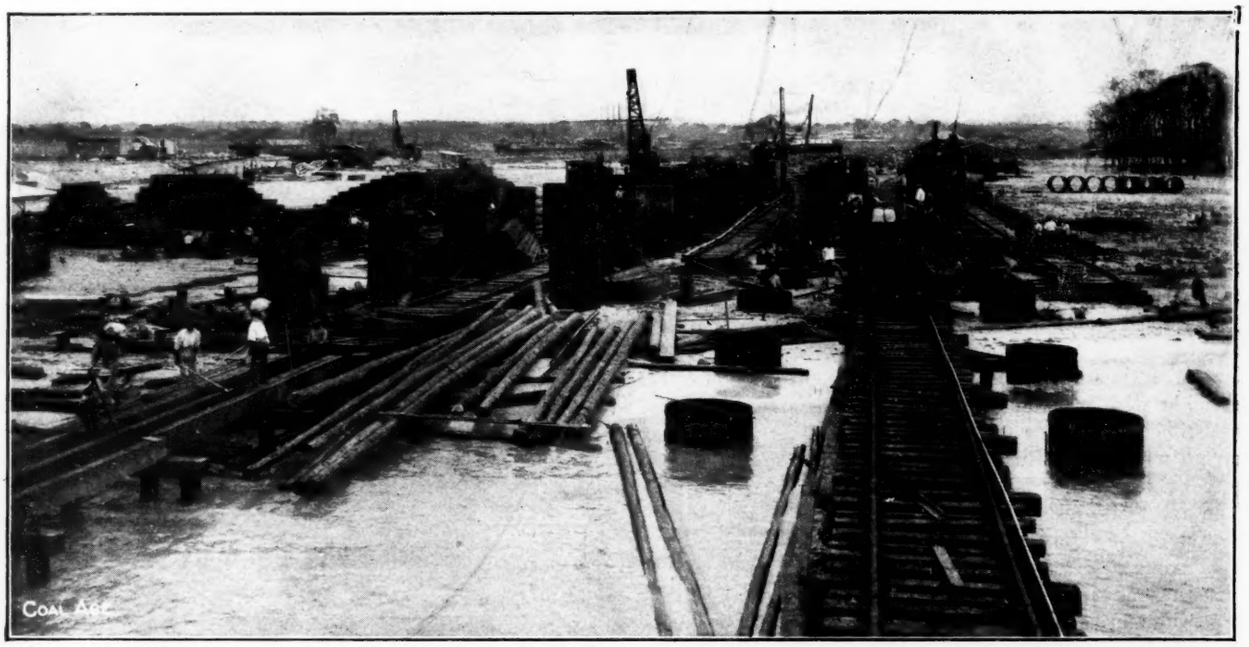
SYNOPSIS—The government invites private companies to participate in the business of supplying ships at Panama with bunker coal. Storage sites will be rented upon reasonable terms. The government will make a charge for use of the federal coal-handling machinery. The plant on the Atlantic terminus will store approximately 500,000 tons of coal. Both wet and dry storage will be arranged for. War precautions taken.

Now that the Panama Canal is in active operation, the question of bunker coal becomes of interest. This is especially true inasmuch as the first seven weeks of operation has disclosed a greater canal business than was anticipated. The European War began about two weeks prior to the opening on Aug. 15, so that we may very well consider that the canal has made a first-rate start.

During these opening weeks, an average of two vessels per day used the waterway. About 30 per cent. of these were British vessels and 50 per cent. American. It is scarcely probable that this relation will be maintained. In fact, more British vessels went through during September than did American, although during the previous two weeks only two British ships used the canal. If we include the tonnage of 115 barges which used the canal prior to the day of formal opening, the total net tonnage passing through up to the end of September amounted to 297,655. Including pilot charges, the tolls amounted to $360,706.29—an average of $1.25 per net ton.

Price on Coal at Panama

Although the two big Government coal-handling plants have not yet been installed, coal is now obtainable at either end of the canal. The price on the Pacific, or southern, end is $1 per ton more than on the Atlantic, or northern, end. At Cristobal, the Atlantic terminal for coal, the price of bunker coal is $5.40 per ton, trimmed in bunkers. This represents coal delivered from lighters. If the ship's own gear is employed in loading from railroad cars alongside wharf, the price is $5.15. The use of steam hoist and crane may be obtained for $1 per hour. The difference of $1 in cost is due to the expense of transportation across the isthmus. No coal is being brought from ports on the Pacific Ocean. The present sources of supply are the coal fields of Virginia and West Virginia. Probably the whole passes through the terminals located at Hampton Roads, Va.



Setting the Steel Caissons that Will Contain the Concrete Columns Designed to Support the Coal-Loading Wharves

On the Atlantic end of the canal, coal is transferred to vessels either by the aid of lighters or else by a single cantilever crane serving a coal wharf. On the Pacific end, lighters are the sole dependence. The capacity of the present facilities at either terminus is about 600 or 750 tons per 9-hour day. When the new Government plants go into service, there will be an enormous increase in capacities.

Where ships approaching the canal or on the way through may want to advise of their desire for coal or to inquire the price and so on, the proper procedure is to send in a radio message directed to *Receiving and Forwarding Agent, Panama R.R.*, either at *Cristobal* or *Balboa*, according as it is desired to do business with the Atlantic or Pacific terminal. There are Government radio stations at both ends of the canal, which handle commercial messages. When it is desired to take on coal at Cristobal, the radio station at Colon is the one

nearby. If the coal is to be taken on at Balboa, there is a station at the same point. In case inquiries of a general character are to be made, the officer addressed is properly the *Captain of the Port, Cristobal* or *Balboa* as the case may require.

The present radio stations have limited transmission capacities. The Colon station has a reach of about 300 miles in the daytime and the Balboa station a 200-mile daytime reach. More powerful stations are now under construction by the Government. When these are put into service, it will be possible to transmit in the daytime to a distance of 500 miles.

The two coaling plants will not be duplicates in design nor in construction, although there will be duplicate features.

It seems to be anticipated that the great bulk of the bunkering business will be at the Atlantic terminus. A controlling factor is no doubt the increased cost of getting coal to the Pacific side. This increase in cost is not due merely to the fact of a longer haul. The toll charges play an important part. All commercial vessels using the canal are subject to a toll of $1.20 per measured-ton of cargo space, when going through with a partial or complete load. If the passage is made in ballast, the same cargo space is charged for, but at a 40 per cent. discount. The Government recognizes no intermediate condition between a full load and no cargo at all. A barge going through with a load will pay $1.20 per measured-ton of cargo space one way, and $0.72 the other way. As a measured ton is 100 cu.ft. and as 2000 lb. of bunker coal occupy about 40 cu.ft., we have for the round-trip toll charge $0.768 per short ton or $0.860 per English ton or $0.845 per metric ton. Most of the vessels that have so far used the canal have gone through loaded.

The Government Invites Private Enterprise

With reference to the new coaling plants, which are expected to go into service in 1915, the policy of the Government is to welcome private parties and concerns who wish to participate in supplying ships with bunker coal. The Government will make a moderate charge for the service of its handling plant, the use of coal barges, etc. Storage land will probably be rented upon reasonable terms. At present, the license is revocable at the pleasure of the Government and without provision for reimbursement for permanent improvements on the land. These terms are, of course, unattractive, and cannot hope to find responsible takers who have in contemplation the expenditure of any considerable sums upon wharves, piers, etc. However, this situation will surely be corrected by Congress. The Isthmian Canal Commission called attention to the matter in its report for 1913. The real estate tax upon the value of the improvements is 1 per cent. per annum. There is also a merchandise tax of 5c. for each short ton of coal sold.

Originally, the design for the plant at the Atlantic terminus had in contemplation the storage of 300,000 tons; but it has been decided to increase this 62 per cent. This change of plan has arisen because of the demand for space. The area is to be 1700 ft. long and 310 ft. wide. A large part of the coal in storage will be perpetually under water. To provide a suitable site for the wet storage, a suction dredge was put to work some time back with instructions to dredge to 28 ft. below the sea level. Dredging of the berths alongside the wharves is to be carried to a depth of 41 ft. for a frontage of 1065 feet.

The general site is located at the north end of Mindi Island between the present Panama Canal and the old French Canal. It will thus be situated alongside the sea-level stretch to the north of Gatun Locks. There will be an unloader wharf where coal will be loaded in and a reloader wharf where coal will be loaded out. The reloader wharf will extend along the west side of the site—the side facing the Panama Canal. The unloader wharf will extend along the east side—the side facing the old French Canal. Both these wharves will be 1170 ft. in length and will be connected on the north by an end wharf. The three wharves will inclose the storage spaces and will provide for the coal-handling equipment. The wet storage space will be at the northernmost end. South of this will be the dry storage space. This latter site has already been filled to the required level of 2 ft. above the sea. A certain amount of work has also been completed on the concrete construction. Thus, the side walls of the dry storage space were about completed on Oct. 1.

Concrete Piers for a Foundation

The wharves will presumably rest upon the rock. The foundations are being constructed of great concrete piers

Excavating for a Coal-Storage and Coal-Handling Plant at Panama Canal

6 ft. in diameter. These are constructed by driving 6-ft. cylindrical steel shells to the level desired. As these go down, they are added to at the top, so that when the lowermost section has reached the rock, there will be a continuous shell extending all the way to the surface. The interior is then excavated by means of orange-peel grab buckets. A steam hammer is employed in driving down the shells. After the interior has been cleared of earth, the great shell is filled with concrete. It is a matter of indifference, I suppose, as to what ultimately becomes of the shell. Probably, only the upper part will yield to corrosion in any short period of time. The fluctuations of the tide on the Atlantic end of the canal are slight, so that only a few feet are exposed to wind and water. Corrosion will no doubt operate some feet further down than the minimum level of the water; but will probably have only a very slow effect far down. However, even if it all rusts off, we still have a heavy column of concrete.

The wet storage section of the coal pile standing on a plane 19 ft. below the surface of the water—that is, 19

ft. below mean sea level—will have a bottom stratum about 20 ft. thick that will always be submerged in salt water. This coal will be known as *wet*. The stratum of 20 ft. next above will be known as *normal dry*, and the top of the pile—a stratum perhaps 10 ft. thick—will be termed *emergency dry*. The entire height of the coal pile will accordingly be about 50 feet.

When the sea is at extreme low water, the wet coal will stand in 18 ft. of water; when extreme high water occurs, it will stand in 21.65 ft. There will thus be a total variation in the surface level of the sea of 3.65 ft. The precise level of the top of the wet coal and bottom of the normal dry will probably vary from time to time, and perhaps from point to point. It is assumed as 1 ft. above mean sea level. The wet coal is reserved for naval use. The 50-ft. pile will have its top 31 ft. above mean sea level. When the plan area of the pile was reckoned at 1000x250 ft., the entire contents were estimated at 298,800 short tons. In the wet stratum were 125,000 tons; in the normal dry stratum, 121,000 tons; and in the emergency dry stratum, 52,800 tons. The pile will, with the area extended to 1700x310 ft., contain 485,000 tons.

The equipment that will be mounted on the wharves will be quite heavy; so that the big concrete columns will really have a duty commensurate with their size. Toward the end of September, 35 steel caissons had been sunk to rock on the site of the loading-out wharf and excavated; 45 more have been set in position. On the site of the loading-in wharf, 40 caissons have been set. The rock lies from 30 to 65 ft. below the sea bottom. It is overlaid presumably by coral rock and sand—that is to say, the same materials encountered by the suction dredge when it was well under way with the dredging of the wet storage basin.

At the loading-in wharf, the channel will be about 500 ft. in width; at the loading-out wharf, the berth will be 250 ft. wide or more.

General Scheme of Operations

The general scheme of operating the plant is as follows: Coal will be brought to the loading-in wharf by collier or other vessel. Two vessels may be unloaded at a time, as four unloading towers will be provided—two for either vessel. These will dig the coal from the hold, elevate it and either deposit it in a hopper from which it may be delivered to a conveying system or to railway cars, or else transfer it immediately to the storage pile. The pile itself will be commanded by stocking and reclaiming bridges. These will serve to perform the usual functions of such apparatus. There will be a conveying system, a part of whose duties it will be to receive coal from the hopper on an unloading tower and convey it to various parts of the storage pile. Another loading-in function of this system will be the transportation of coal from a tower to the wharf bunkers.

In loading out, coal will be reclaimed and loaded by the bridges, the conveying system, the unloading towers and special reloaders. Small amounts of coal may also be loaded out from the wharf bunkers. The mechanical apparatus may be used in loading out in a variety of ways. Thus, at times it will be convenient and possible to reclaim coal from the storage pile by means of an unloading tower and to discharge it by the same means into the vessel being loaded. It is a question of the conditions at the moment.

The reloaders, however, do not act alone. They receive coal from the conveying system and deliver it to the vessel. The reloaders introduce flexibility into the loading-out operation, permitting coal to be delivered to vessels varying in freeboard and size and location of hatches. The transfer of coal from one part of the plant to another will be accomplished by means of the bridges and the conveying system.

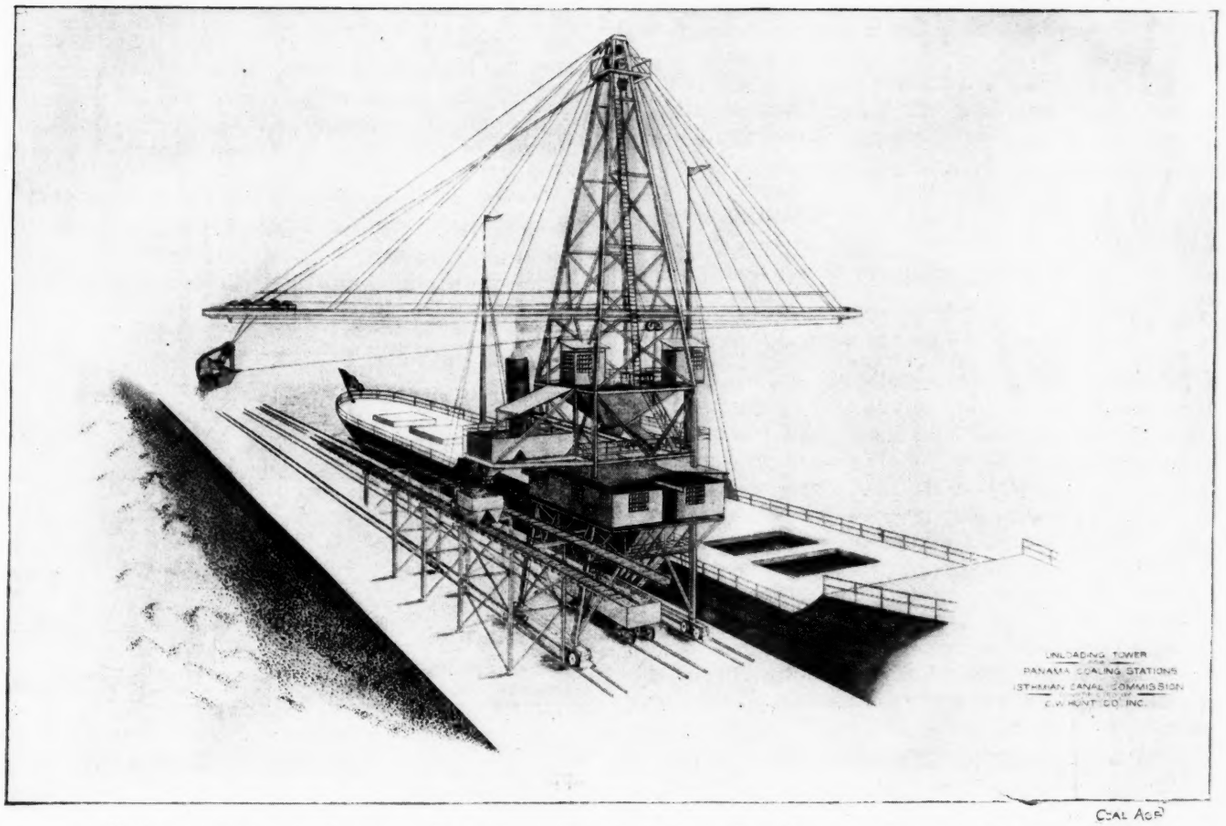
The Unloading Towers

The unloading towers are perhaps the most interesting feature. Each of the four is a self-contained unit dependent upon nothing else for its operation. It is not driven by an electric current supplied from some station, but by steam on board the tower from a coal supply always available. It is self-propelled, and in short performs all its functions by and through itself. It seems that the object especially in view in making these apparatus independent of other apparatus is to minimize the risk of having them put out of service during a war. It will not be possible for an enemy to destroy or damage an electric station and thus necessarily put an end to mechanical coaling operations. The unloading tower must itself be destroyed or damaged to make it useless. The destruction of one unloader will not affect another further than possibly to interfere with its mobility by piling up débris on the track used by the towers.

Now the unloaders are able to perform the complete operation of loading out, provided only that there is a supply within reach back of them. They may be used, too, to transfer coal from a barge to a vessel, both lying parallel alongside the wharf. From what has now been said, it will be understood why the operation has been made dependent upon power generated on board. Further, steam has probably been selected largely for war reasons. There will always be coal at hand, if the tower is to be used at all. Consequently, it will always be possible to have fuel for power generation.

The towers move on a track which parallels the dock. They are of skeleton steel construction, and rise to a height of 150 ft. above the rails, of which four are required to make up the track. Two are arranged on one side and two on the other, each pair forming a subsidiary track for the four-wheeled trucks upon which the tower is mounted. Measuring between the center lines of the subsidiary tracks, we have a distance of 34½ ft. The subsidiary tracks themselves are laid upon a 3-ft. gage. The rails are let down into the concrete floor of the wharf until their heads are flush with its surface. There are four trucks altogether, two on a side. One on either side drives while the other trails. The transmission of power to the driving trucks is effected by means of worm gearing.

Seventy-nine feet above the rails, a long boom is arranged in such manner that it passes right through the body of the tower and extends 61 ft. out from the water side and 71 ft. from the rear. The entire length of the boom is thus in the neighborhood of 170 ft. The coal is recovered from a vessel or from the stock pile by a 2½-ton grab bucket whose carrier travels along the boom from end to end. The boom is supported from the peak of the tower far above by means of suitable ropes. The inshore reach of the boom is sufficient to permit a two-track elevated railway to be located between the tower and the storage pile and still reach a point over the latter. These tracks accommodate the inter-plant conveying system.



SHOWING GENERAL STYLE OF UNLOADING TOWER AT THE NEW PANAMA COALING STATIONS

THE COAL HOPPERS

Beneath the boom but within the limits of the tower is arranged a 50-ton hopper. There are also two smaller hoppers at a lower level arranged over the elevated tracks, one over each of them. The big hopper delivers either to railway cars far below on a track arranged between the two pairs of narrow-gage track supporting the tower or else to the small hoppers. A 42-in. conveying belt carries coal from the big hopper to either one of the smaller ones.

It will now be understood that the tower is able to take coal at either end of the boom and deliver at the other end or to railway cars or to the conveying system. The 61-ft. outboard reach enables the boom also to cover the case of two vessels alongside, one a collier and the other a vessel seeking to replenish its bunkers.

There are four independent power units, all steam operated, which perform the separate duties of hoisting and lowering the bucket, of traversing the bucket carriage, of raising and lowering the boom and propelling the whole tower, and of operating the conveying belt. The first is a direct-connected, double-cylinder, 18x24-in. engine; the second is a double-cylinder, 12x24-in reversing engine; the third is a geared, 10x12-in. engine; and the fourth is a double-cylinder, 6x8-in. engine. All these units are located in a suitable closed-in space beneath the big hopper. This 50-ton hopper is constructed of 3/8-in. steel plates, and is 12x30 ft. in plan. Delivery to the railway cars beneath the power room is effected by chute. The four towers operate on the loading-in wharf facing the old French Canal.

THE BRIDGES USED FOR STOCKING

The bridges used for stocking and reclaiming are of the duplex variety—that is, each is equipped with two carriages and their buckets. The buckets are of 5-ton capacity. Eight four-wheeled trucks support a bridge. Just as the towers were self-propelled, steam-operated units, so these are self-propelled, electrically operated apparatus. They may be shifted along their track at the rate of 50 ft. a minute. These machines have a rated capacity of 1000 tons per hour. Any one of them may be used to stock and reclaim simultaneously. They deliver either to the stock pile or to the conveying system.

The function of the special reloaders is to receive coal from the conveying system and make delivery to the vessel to be coaled. There is a hopper at one end of the movable apparatus, which serves to preserve a balance between receipts and deliveries. A telescopic chute is arranged at the other end. A conveying device transfers coal from the hopper to the chute. These machines are in effect movable pockets. They operate on suitable tracks laid on the loading-out wharf facing the Panama Canal. Their individual rated capacity is 500 tons per hour.

Minor demands for coal may be taken care of by means of a stationary wharf bunker, constructed of steel and concrete, having a capacity of 1500 tons. It is subdivided into three compartments, each of 500 tons capacity. Two valves serve each compartment. The delivery opening may be made as large as 6 sq.ft. in cross-sectional area. By means of a folding chute, each compartment may be made to deliver coal through a vertical range of 14 ft., half above the wharf and half below. There is a second chute which delivers at an unvarying level of 5 ft. above.

The coal leaves the bin at points 28 ft. above the wharf. The tilted floors provide a constant pressure which becomes instantly available when the doors are opened.

The Atlantic plant is connected with the Panama R.R. A spur from the yards at Mt. Hope follows a southerly direction for about 3000 ft. when it swings to the west, making the crossing of the old French Canal by means of a pile trestle, and then goes north for 3500 ft. or thereabouts to the site. The trestle work is later on to be removed and replaced by a steel bridge with a movable span. This will permit the navigation of the old French Canal past this point.

The Balboa Coal-Handling Plant

The coal-handling plant at Balboa is subordinate in interest and size to that at Cristobal. Two of the 150-ft. towers are to be located here, where their functions will be similar to those of the four towers at the other end of the canal, except that the two towers will not connect with the storage pile.

In designing the plant as a whole, it seemed advisable to utilize certain cranes which had served constructional purposes at Miraflores, especially as these cost about $300,000. There are four of these double cantilever cranes. These will command the storage yard, 240x500 ft. in area. Here will be accommodation for 210,000 tons of coal, divided 100,000 in the wet stratum, 80,000 in the normal dry stratum, and 30,000 in the emergency dry stratum. The coal in wet storage is here reserved for the use of the Navy just as at Cristobal. In loading in, it is proposed to chute the coal from the towers directly into the storage pile. It will then be rehandled by the cranes. There is to be a conveying system here also. It will serve both the cranes and the towers when loading out is going on. It is expected to develop a loading-out capacity of 1000 tons per hour by using all six units—the four cranes and the two towers.

As before pointed out, the towers at Cristobal will be steam operated. The same applies to the two at Balboa. But, apart from the towers, the operation of all devices at both plants will be by electricity. There will be suitable substations for supplying current.

Government Colliers Will Carry Coal to the Canal

The Panama Canal will operate at least two colliers, whose names will be the "Achilles" and the "Ulysses." They will be used to carry coal from Eastern United States to the two coaling plants on the canal, and will be quite similar to the navy colliers, "Orion" and "Jason." They will have a length of about 500 ft., a beam width of 62 ft., and will be 39½ ft. deep. Their cargo capacity will be 12,000 tons each. Apparently, their own round-trip bunker supply will be in excess of this capacity. When loaded to the maximum they will draw about 28 ft. of salt water, and will have a speed capacity of 14 knots. The cost will be $987,500 each. They will probably go into commission during the early part of 1916. At the end of August, 1914, both vessels were more than a month ahead of contract time as respects their construction.

The quantity of coal obtained from the Jalainor mines, North Manchuria, in 1913, was 142,857 tons, of which 125,000 tons were delivered to the Chinese Eastern Railway and 17,857 tons to the Trans-Siberian Railway. The sales of coal from the Japanese coal mines at Fushun have increased considerably, the sales for 1913 being reported at 170,143 tons.

Standard Pipe Threads

The threads, as produced in the Briggs system, says *Power*, for Nov. 3, are shown in the illustration. The taper employed has an inclination of 1 in. to 32 to the axis, therefore the total taper is 1 in. to 16 in., i.e., ¾ in. to the foot or $\frac{1}{16}$ in. to 1 in. The angle of the thread is 60 deg. and its depth four-fifths of the pitch, or $0.8\,\frac{1}{n}$, where n equals the number of threads per inch.

Threads F are perfect at top and bottom. Back of these are two threads with perfect bottoms but flat tops; behind these are the imperfect ones produced by the chamfer of the die.

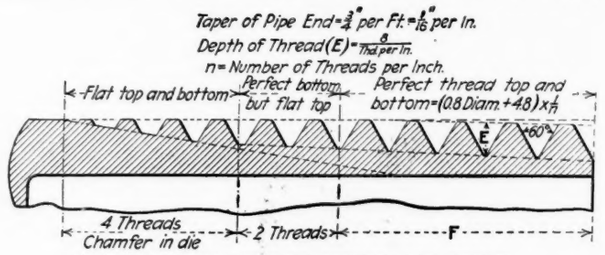
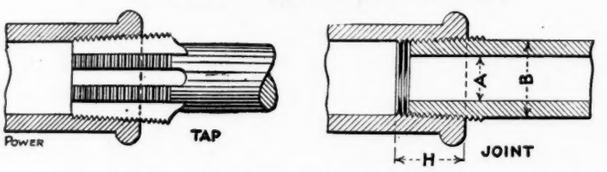


FIG. 1. LONGITUDINAL SECTION OF BRIGGS PIPE THREAD



Briggs' Standard Pipe Thread

It can be readily seen by the foregoing how necessary it is to have the pipe and fitting sizes match, so that the full, perfect threads in each will register with the other. A thread made up more or less than this will result in a less perfect joint.

PIPE THREADS

Diameter	Threads per Inch	Diameter of Drill
⅛	27	11
¼	18	7
⅜	18	21
½	14	29
¾	14	37
1	11½	1 7/16
1¼	11½	1 23/32
1½	11½	1 47/64
2	11½	2 3/16
2½	8	2 11/16
3 to 10 inc.	8	

West Virginia Mine Fatalities Show Decrease

The fatality list in the coal mines of West Virginia for the month of November has just been issued by the Department of Mines, and shows a total of twenty-five deaths from accidents at the mines, a decrease of nine as compared with the report for the previous month, when thirty-four were killed, and a decrease of one from the corresponding month for last year.

Eleven of these fatalities were caused by falls of roof and coal, four by mine cars, three by locomotives, three by electricity, one by mining machine, one by explosive, and two miscellaneous. The last two, while reported to the Department, were not really chargeable as fatal mine accidents, one death being due to scalding on the outside, and one due to blood poisoning, following a slight injury to the hand. Thirteen of the victims were Americans and twelve were foreigners.

Steep Pitch Mining of Thick Coal Veins--II

By W. G. Wildin*

SYNOPSIS—Only 64 per cent. of the steep pitching Mammoth bed has been obtained in the Lansford section by four successive minings, the first gangways being along the bottom rock, the second along the top rock, the third in the middle of the bed and the fourth in the Skidmore seam below. All this could have been mined out through the last mentioned gangways at great saving of cost. Paneling methods will cause an important conservation of coal and more speedy development.

At the Greenwood colliery a record was kept of every step in the driving of two adjoining breasts and in the robbing of the pillar between them (see Figs. 1 to 4), in order to determine what recovery of the vein was being made by the method in general use. At this point the coal was 59 ft. thick. The section was 190 ft. long and its total contents were 590,000 cu.ft. of solid coal or 8260 mine cars of 125 cu.ft. each. Of this 5442 mine cars were loaded out, making a 65.9 per cent. recovery. This work was done in 1909, 1910, 1911 and 1912.

The method of robbing the pillar was as follows: Chutes were first driven along the manways; slant chutes were driven across the pillars and a chute driven back almost to the top rock. Then a breast was driven up the pitch and the coal mined. Chutes along the small pillars between this breast and the old breasts recovered that part of the vein. After all the coal had been mined near the top rock, another breast was opened off the main chute (driven back through the pillar), and later chutes were driven to mine the small pillars between the breast and the old breasts.

When all the coal possible had been mined in this way toward the top rock, a breast was opened up the pitch along the bottom rock. Again chutes were driven to mine the small pillars between this breast and the old breasts. After all this had been done the upper part of the pillar was supposed to have been robbed completely; then retreat was made down the chute about 30 ft. and a main chute driven back through the pillar, and the whole operation repeated.

The drawings show a network of chutes and breasts. It has been found by experience that, in order to recover a good percentage of the coal, where the vein is so thick, chutes must be driven in any and all small pillars that have been left between any of the breasts or chutes. In every case, however, the pillar being robbed must be controlled; it cannot be allowed to run away.

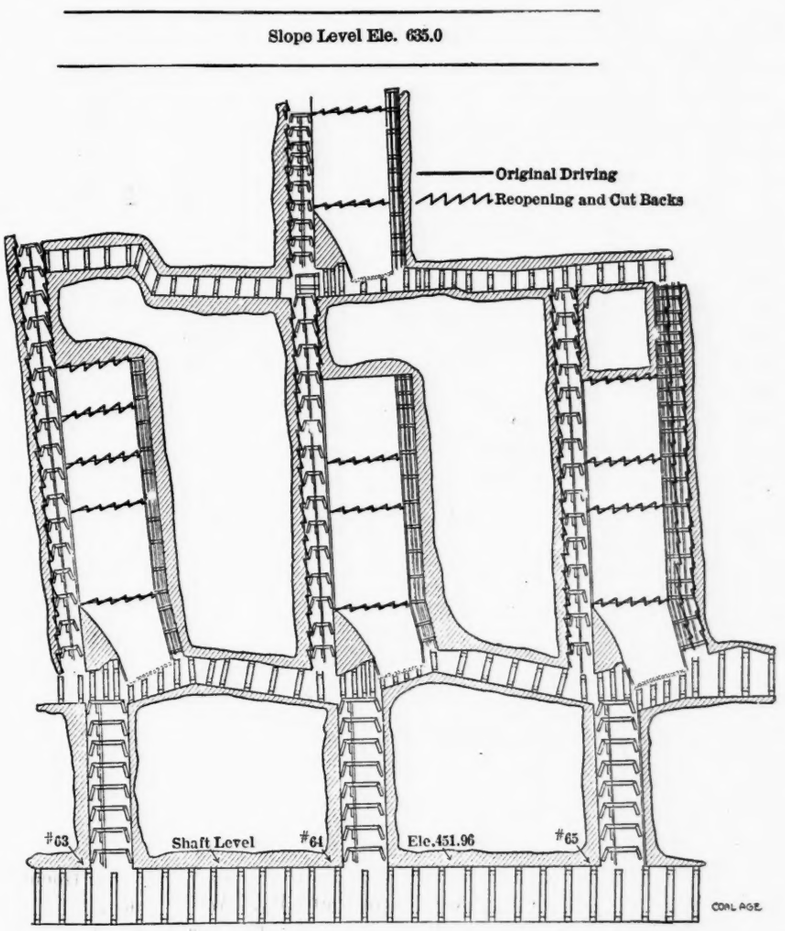


FIG. 1. METHOD OF WORKING BREASTS AND PILLARS, EAST MAMMOTH SHAFT LEVEL, COLLIERY NO. 10

Reworking the Mammoth through the Skidmore

The reworking of old territory is always an interesting problem. Years ago it was the practice to reopen an old gangway in the vein and as a rule the cost was heavy, especially if the ground had not been standing long enough to settle thoroughly. In some instances six or seven years suffices for such settlement, but in other cases fifteen years is insufficient for the completion of that action.

The most satisfactory way to rework the old Mammoth territory has been by driving the gangways in the Skidmore vein and driving rock chutes up to the Mammoth. At first these chutes were driven about 100 ft. apart. This distance has now been extended to 120 ft.,

*Mining superintendent, Lehigh Coal & Navigation Co., Lansford, Penn.

NOTE—Paper read at Pottsville, Penn., meeting of the Pennsylvania Anthracite Section of the American Institute of Mining Engineers, July 25, 1914.

140 ft., and even 150 ft. at one colliery. The rock chutes are connected at the top with slant chutes; then, about 10 ft. off the rib of the rock chute, main chutes are driven straight up the pitch, and these main chutes connected by slant chutes across the pitch. These slant chutes provide ventilation and also determine the location of any pillars which have not been worked. At several collieries where the pitch is almost vertical, a straight or box chute about 40 ft. in length is driven up the pitch from the apex or meeting point of the two slant chutes (Fig. 5). At the top of the box chute two other slant chutes are driven, and again at their meeting points a box chute is put in. This is continued and we are able to reach up the pitch any distance desired, in many cases over 400 ft. This method has proved its value and at all times the miners are held safe.

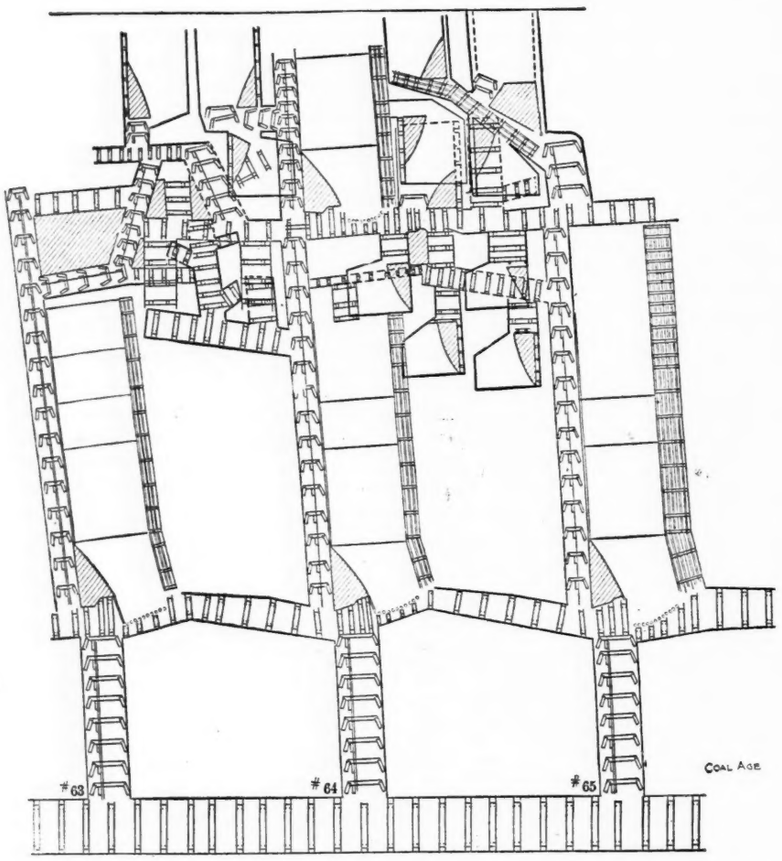


FIG. 2. METHOD OF WORKING BREASTS AND PILLARS, EAST MAMMOTH SHAFT LEVEL, COLLIERY NO. 10

THE BOTTOM BENCH OF THE MAMMOTH WAS LEFT AS TOO HARD TO MINE

As a rule this system of chutes is made in the bottom bench of the vein, which in most cases has been found solid; the reason being that the coal was extremely hard and many years ago could not be mined at a profit. At intervals, holes are driven through the 18-in. slate into the middle and top benches of the vein, and the gob from the old breasts is drawn out. Where the gob is of such a nature that it can be driven through, chutes are driven on a pitch of 30 to 35 deg. through the vein into the top rock. A pitch of 35 deg. is not too heavy through gob, as more rock has to be handled, and the gob itself is sticky or gummy.

Where the bottom bench has been worked, it is necessary to do all the opening work for robbing purposes in the gob. On the steep pitches we prefer to make the chutes on a pitch of from 30 to 35 deg. and drive across the vein (along the strike) or else directly through it (at right angles to the vein), for the reason that in the gob it is necessary to protect the roof of the chute by driving poles, 6 to 10 ft. in length and 4 to 6 in. in thickness, ahead of the actual working face, to give full protection for the placing of the next set of timber.

It is readily seen that in loose ground, if the chutes were driven directly up the pitch of say 70 deg., the poling process would be of no benefit, and miners would be in danger from falls of material.

SPACING OF ROCK CHUTES DEPENDENT ON ROCK THICKNESS

In driving rock chutes from the Skidmore to the Mammoth vein, the question often arises as to the economical spacing of the rock chutes, due to the varying thickness of the rock between the two veins. Our experience has been that where the interval is 30 ft., the chutes can be driven 100 ft. apart. Where it is 40 and 90 ft., the chutes should be spaced 120 and 150 ft. apart respectively.

About 1891, when the fourth and fifth levels at the Coal Dale colliery were opened, the gangways were made in the Skidmore vein and rock chutes driven every 50 ft. to the Mammoth vein. These chutes were about 30 ft. in length and on a pitch of 35 deg. The mining in the Mammoth vein was done according to the usual methods such as I have described. These Skidmore gangways required much repair, due to the poor top rock of the Skidmore vein at this colliery, and also to the small distance between the chutes.

At one colliery, where the pitch varies between 80 and 90 deg., a somewhat different system of slant chutes was adopted. They were driven across the pitch at about 30 deg., and along the bottom rock. At the junction point of the slant chutes a chute was driven through the vein to the top rock, then turned back again to the bottom rock and slant chutes again driven. There are a number of instances where more than 1000 ft. of such chutes have been driven from the top of one of these rock chutes.

CIRCUMVENTING A RUNAWAY BREAST

In other cases (depending upon the conditions), instead of driving the rock chute from the Skidmore to the Mammoth, a chute has been driven up the pitch in the Skidmore to the predetermined height, and then a

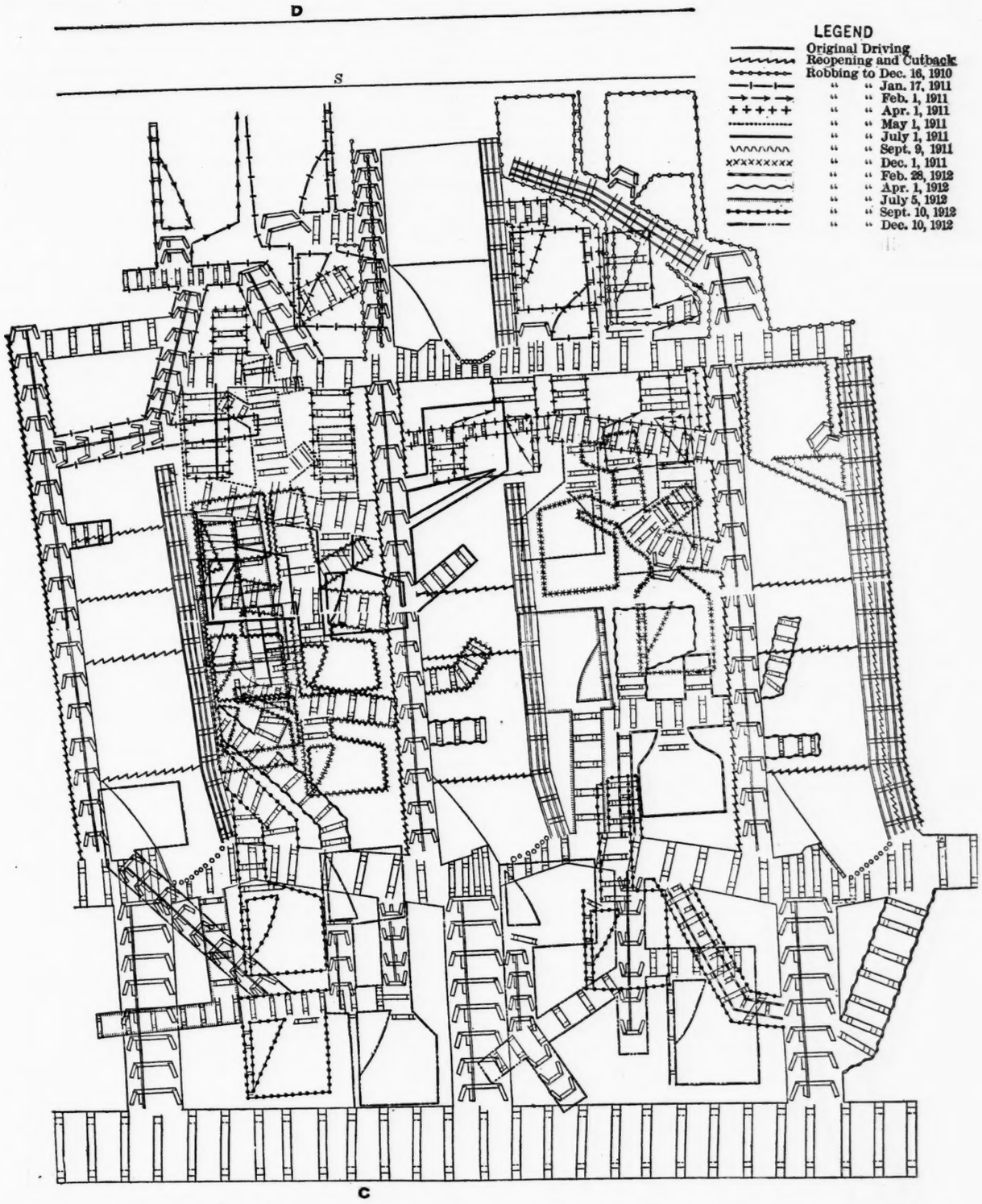


FIG. 3. METHOD OF WORKING BREASTS AND PILLARS, EAST MAMMOTH GANGWAY, NO. 10 SHAFT, GREENWOOD COLLIERY

rock chute driven into the vein, the object being to make the opening above the point where the breast has run away and filled with rock. Where we have been able to work this method it has proved successful.

A variation of this method is being tried out at the Lansford No. 4 colliery (Fig. 6), where the vein is on a pitch of 72 deg. The rock chutes are driven from the Skidmore gangways to the Mammoth, and from the top of these chutes long slant chutes—7-ft. collar and 7-ft. leg—on a pitch of 35 deg., are driven along the bottom slate of the Mammoth vein to the bottom of the old breaches on the surface. This is being done for the

purpose of re-robbing the old workings between the old Water Level gangway and the surface, the lift being about 300 ft. From these slant chutes, straight chutes—5-ft. collar and 5-ft. leg—are driven up the pitch at about 35-ft. centers, depending upon the condition of the gob. The robbing work is started at the top and is continued down the pitch. Great care is taken to keep the robbing faces so far ahead of the chutes driven later that a squeeze may not result.

Still another variation is being tried out at Lansford No. 4 colliery, fourth or Slope Level. This plan (Fig. 7) differs only from the scheme used in the Water Level, just mentioned, in that a 6x8-ft. chute is driven from the Skidmore gangway straight up the pitch in the Skidmore vein for 15 ft., these chutes being spaced 140 ft. apart on the gangway. From the top of the straight chutes, slant chutes on a pitch of 35 deg., 6x8 ft. in size, are driven along the bottom rock of the Skidmore vein for about 80 ft. and connected at the top. From that point a rock chute—6x8 ft.—on a pitch of 35 deg., is driven back to the Mammoth vein, about 30 ft.; then long slant chutes are driven on 33 deg. pitch along the bottom rock of the Mammoth vein to the old level above. The intention was to strike the Mammoth vein above the batteries of the old breasts which were filled with rock.

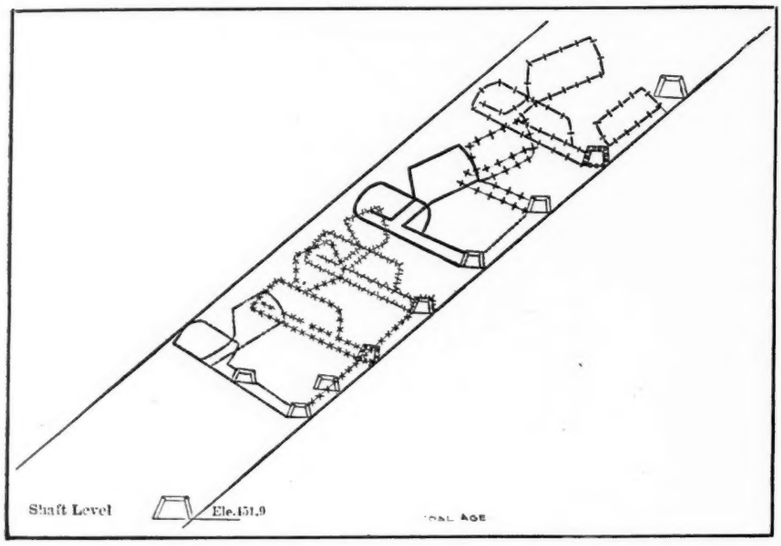
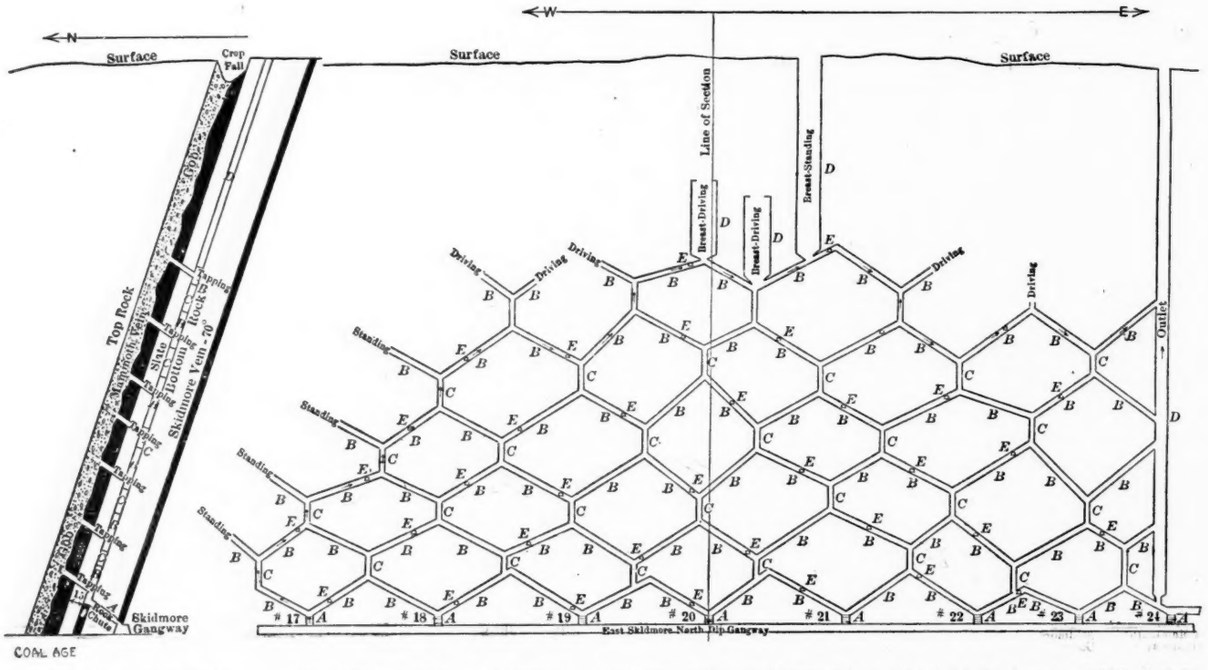


FIG. 4. SECTION THROUGH C-D OF FIG. 3

We have lately arranged to make further tests of these schemes in working new territory, in order to make comparisons with the results obtained from the old established pillar-and-breast method.

The question naturally arises, which is the better of these chute plans? The chute yardage driven is practically the same in both systems, though a little saving is made by using the long slant chute. The great advantage, however, of this latter method over the use of the box chute lies in the fact that the coal passes through practically its whole course over a light pitch and thus there is much less breakage. The only real drop of the coal is in the straight chute



Cross-Section through Chute No. 20

(A) Rock chutes, Skidmore to bottom split of Mammoth. About 30 ft. long on 35°, 6x8-ft. chute, 120-ft. centers. (B) Slant chutes on bottom rock of bottom split of Mammoth. About 70 or 80 ft. long on 35°, 6x6-ft. chutes. (C) Straight chutes up the bottom rock of bottom split of Mammoth. About 20 ft. long on 70°, 5x6-ft. chute. (D) Breasts on bottom rock of bottom split of Mammoth. About 160 ft. long to surface on 70°, 8-yd. breast, 50-ft. centers. (E) Tapping chutes from bottom split to middle split of Mammoth. Used as batteries for running coal.

FIG. 5. METHOD OF WORKING BOTTOM AND MIDDLE SPLITS OF MAMMOTH VEIN, AS VIEWED AT RIGHT ANGLES TO THE PITCH. NO. 5 SHAFT, SECOND LEVEL, EAST SKIDMORE, NORTH DIP GANGWAY

immediately at the robbing point. In the other method there is bound to be much breakage in the straight box chutes unless they are kept full at all times and this requirement, we know, is frequently neglected by the workmen. At best there is bound to be a certain amount of grinding of the coal in the box chutes.

The Fourth Attack on the Same Piece of Coal

In many cases the present working is the fourth mining of the same piece of territory, 30 per cent. having been extracted on first mining, 16 per cent. on the second, 8 per cent. on the third and 10 per cent. by the fourth and last.

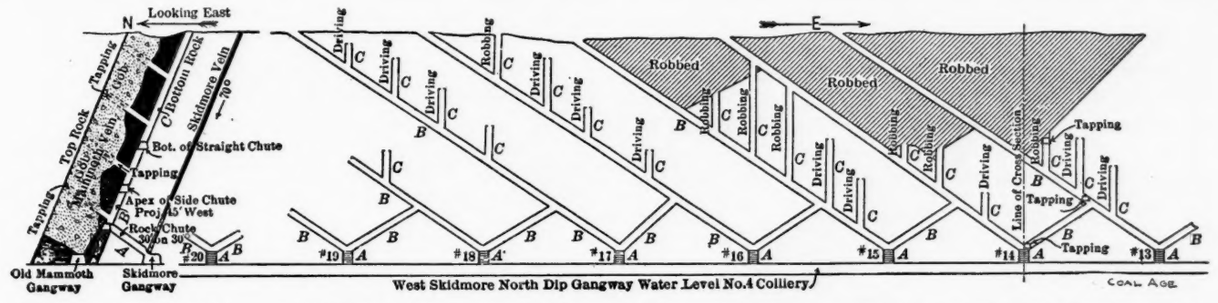
At Coal Dale No. 8 colliery workings, about 60 years ago the first gangway was driven in the Mammoth vein along the bottom rock, and mining was done by the old pillar-and-breast method. After the gangway had been driven to its limit it was robbed out. About 15 years later another roadway was driven through the same territory along the top rock of the vein, and this in turn was robbed out. About 30 years ago a third gangway was driven at a level about midway between the two just mentioned and the crop; later this roadway also was robbed out. Five years ago, believing there was a large quantity of coal to be won in this territory from the Mammoth vein, we began to drive a gangway in the Skidmore vein 30 ft. underneath the Mammoth and drove rock chutes, 100-ft. centers, to the old Mammoth workings. We figure the present recovery from this section at 10 per cent.

Only 64 Per Cent. Is Saved after Four Minings

If the present method of mining—that is, mining the Mammoth vein from the Skidmore vein by means of rock chutes—had been adopted in the original mining, not only the 10 per cent. now being obtained could have been recovered but also the 54 per cent. which has been secured only after driving the three gangways and their airways above mentioned, with their various breasts and chutes.

I have kept a record of the recovery and the cost of working 900 ft. of this territory during the past five years, and estimate that the $45,000 or $50,000 which these old openings cost could have been saved. The cross-section (Fig. 8) of the vein shows the position of the old gangways and the present Skidmore roadway.

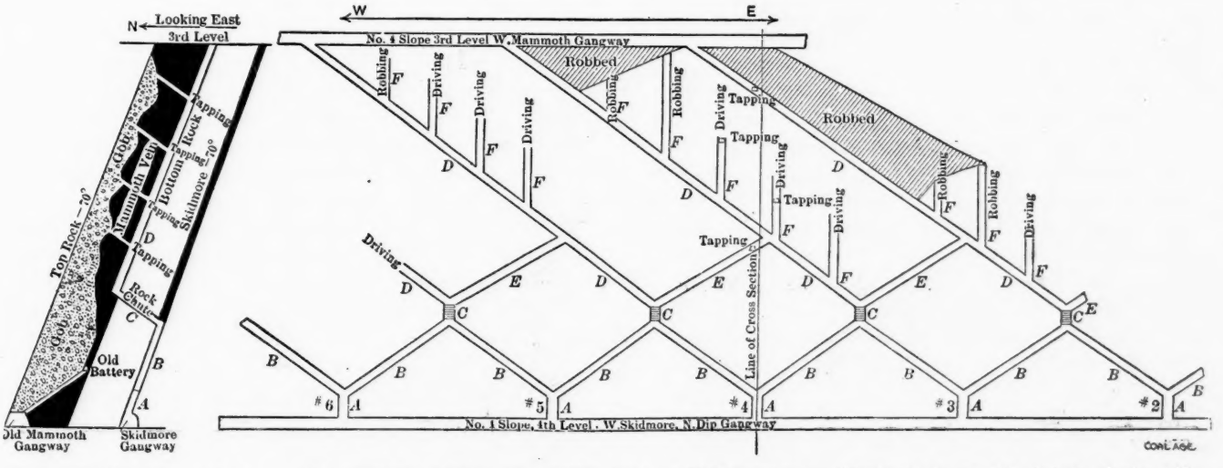
In mining very thick veins on steep pitches, it will



Cross-Section through Chute No. 14.

(A) Rock chutes from Skidmore to Mammoth; 6x8-ft. chute, 35 ft. on 35°, 100-ft. centers. (B) Slant chutes on bottom rock of Mammoth; 7x7-ft. chute on 35°, 300 ft. to surface. Side slants 55 ft. long. (C) Straight chutes up on bottom rock of Mammoth; 5x5-ft. chute, 60 to 100 ft. long on 70°, these chutes being on about 35-ft. centers, depending on condition of gob.

Fig. 6. Method of Working the Mammoth Vein, as Viewed at Right Angles to the Pitch. No. 4 Water Level, West Skidmore, North Dip Gangway



Cross-Section through Chute No. 4

(A) Straight chutes on bottom rock of Skidmore vein. Chute 15 ft. on 70°, 6x8-ft. chute, 140-ft. centers. (B) Slant chutes on bottom rock of Skidmore vein. Chute 80 ft. on 35°, 6x8-ft. chute. (C) Rock chutes from Skidmore to Mammoth. Chute 30 ft. on 35°, 6x8-ft. chute. (D) Slant chutes on bottom rock of Mammoth vein. Chute 300 ft. to third level on 33°, 7x7-ft. chute. (E) Slant chutes on bottom rock of Mammoth vein. Chute 80 ft. on 35°, 7x7-ft. chute. (F) Straight chutes on bottom rock of Mammoth vein. Chute 60 to 100 ft. on 70°, 5x5-ft. chute, 35-ft. centers.

Fig. 7. Method of Working the Mammoth Vein, as Viewed at Right Angles to the Pitch. No. 4 Slope, Fourth Level, West Skidmore, North Dip Gangway, Lansford Colliery

always be possible, even though the most improved methods are used in the original mining, to win some coal by re-mining, but the cost of obtaining what remains will depend upon market and wage conditions, and may be prohibitive.

Many years ago no coal except that of the very best fracture and best appearance was mined, because it was the only kind found salable. Also, only sizes above chestnut (made over a 7/8-in. round screen) could be sold. In recent years, all sizes including No. 4 buckwheat (made over a 1/16-in. round screen) are easily salable, and as a consequence, territory that years ago could not possibly be mined at a profit can now be made to pay.

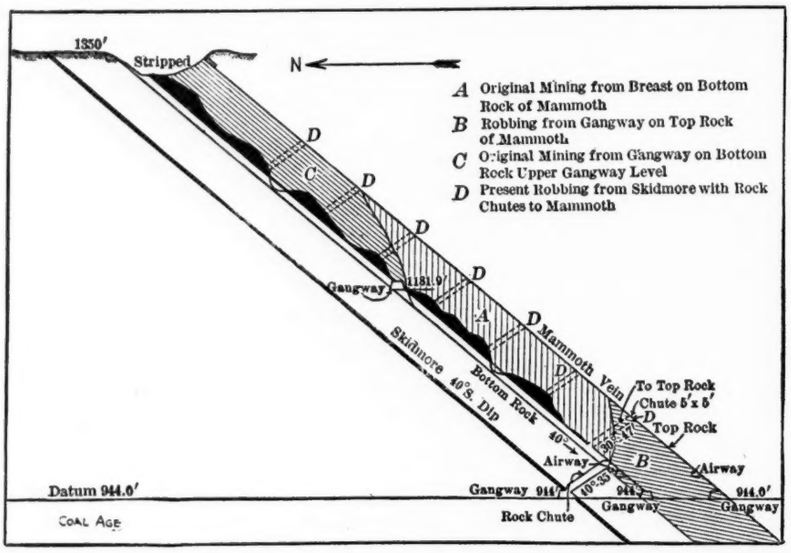


FIG. 8. CROSS-SECTION SHOWING ORIGINAL MINING AND PRESENT ROBBING OF MAMMOTH VEIN, WATER LEVEL, COAL DALE COLLIERY

THE USE OF PANELS

It has been found of great advantage to make panels of a territory where coal is virgin or where the distance between the Skidmore and the Mammoth veins is too great for practical use of rock holes. The length of these panels depends upon the distance between the veins, in some cases being 600 ft., and varying up to 1200 ft. The paneling system has been much extended during the last five or six years in the Panther Creek field, and the results have been so satisfactory that the new lifts are being laid out and worked on this plan. At practically all points, none of the veins underlying the Mammoth are workable.

The haulageway is being made in the Skidmore vein, which varies from a thin leader to 3 ft. in thickness, and tunnels are being driven at 1000-ft. intervals from the Skidmore to the Mammoth, Primrose, and Orchard veins, and gangways opened in both directions off the tunnels, thus making a section of about 500 ft. of each gangway which can be mined and robbed. This will allow an increased number of working faces, and also will greatly reduce the time during which the gangways must be maintained. In years to come this will result in a great saving in the mining of the Mammoth vein.

Where a panel tunnel is driven a pillar is left over it, this pillar being recovered when the gangway is being robbed out. At every 10 breasts a solid block of coal is left; that is, the coal which would be mined by the eleventh breast is left solid with the exception that the gangway and airway are driven through it. This block is mined on the retreat. It is left on the advance so that in case of a mine fire a solid piece of coal is available from which to begin operations. These pillars also tend to stop a "creep."

ROBBING PROGRESS SHOULD BE SLOW

Experience has shown that the best results in robbing the Mammoth gangway, where the vein is 50 ft., or thicker, are obtained when the face is brought back 80 to 120 ft. per year. To many people this has seemed unnecessarily slow, and many attempts have been made to hasten the work, but in every case these has been a decided loss in the amount of coal recovered. This is due to the disturbance of the thick vein matter, causing a general squeeze a considerable distance back from the point of actual robbing. This makes the maintenance of the gangway not only costly but almost a physical impossibility. In some instances a couple of hundred feet of gangway has been lost, owing to quicker robbing than that mentioned.

THE NEED FOR PANELING METHODS IN NEW WORK

When opening a new colliery or a new lift at an old colliery, the question often arises whether it is not better to drive gangways and airways to the boundary limits before opening breasts; also whether it is advisable to open two lifts instead of one. I believe that with the proper system of paneling better results can be attained, because it is possible to have several working faces instead of one, permitting a quicker development. These panels can then be robbed out in a reasonable time, thus preventing heavy timber maintenance cost.

With the system of driving the gangways to the limit there is a period when nothing but development work can be done, and later nothing but robbing work, whereas in the paneling system some sections can be robbed while others are being developed, thus keeping the product of more uniform quality.

The driving of the gangways and airways in the Skidmore vein has not only reduced the timbering expense, but it has improved the ventilation, for the reason that, the vein being so thin, there are no falls to block the airways.

Let Us Publish a View of Your Mining Plant

COAL AGE invites all its readers to send in large photographs, showing either outside or interior views of coal-mining plants. These pictures will be reproduced on our front cover, and a liberal payment will be made for them. If one photograph alone is used, it must be as high, or a little higher than it is wide. All views should be as large and clear as possible.

West Virginia Coal Mining Institute Meeting

By J. T. Beard

The West Virginia Coal Mining Institute held its fourteenth semiannual meeting at Huntington, W. Va., Dec. 10 and 11, 1914. In the absence of Neil Robinson, president of the Institute, owing to his serious illness, the meeting was called to order at 10:30, Thursday morning, Dec. 10, by J. C. McKinley, one of the vice-presidents of the Institute. The meetings were held in the assembly room of the Frederick Hotel.

In a few well chosen words, Mr. McKinley welcomed the members and guests present and emphasized the importance and purposes of the Institute. No expense is spared by the West Virginia operator to establish ideal surroundings and conditions in and about the mines. He considers these essential in order to attract a high class of labor. He believes in educational extension and welfare work as a means of bettering the condition of his employees.

After these few remarks, the chairman of the meeting introduced Mayor Floyd S. Chapman, of Huntington, who made a brief address of welcome and was followed by H. A. Zeller, president of the Chamber of Commerce, who addressed the Institute, welcoming the members and guests present, and extending to them the privileges of the Elks Club, the Guyandot Club, and the Hippodrome, Lyric and Colonial Theaters. Mr. Zeller also stated that the jobbers and manufacturers of Huntington were arranging for a dinner at the Frederick Hotel, Friday evening, at 8 o'clock, at which all of the members of the Institute and their guests were cordially invited.

The Institute then listened to an interesting and valuable paper prepared and read by Richard Smethurst, Cincinnati, Ohio, on "Cost Accounting." This paper was followed by the reading of a paper entitled "Coöperation," which was presented by Col. Z. T. Vinson. This paper, as Col. Vinson stated later, was intended to draw the attention of the coal operators of West Virginia to the need of united action on their part for the purpose of fighting effectively the ever growing aggression of labor leaders. In his paper, Col. Vinson did not limit the effects of this aggression to the coal-mining industry; but stated that business men in general must take up the fight for the protection of their interests. He charged the United Mine Workers of America with being a socialistic body rather than a labor union. The discussion of the paper, following the noon recess, showed a decided unwillingness on the part of some of the members to go on record as indorsing in full the policy advocated, although the value of the paper was fully appreciated.

Following this discussion, in the afternoon, Frank Haas, Fairmont, read an interesting paper on "Mine Gases," which was thoroughly discussed by the members present. This was followed by an instructive paper entitled, "The Pottsville Measures West of the Kanawha and New Rivers," which was prepared and read by R. V. Hennen, Morgantown. Mr. Hennen illustrated his paper by reference to geological charts, showing the location and correlation of the coal measures in the state.

The Thursday evening session of the Institute was devoted almost wholly to the presentation of welfare work in coal mining. J. D. Van Scoten, Interstate Secretary for the Young Men's Christian Association in West Virginia and Maryland, with headquarters at Washington, D. C., offered a few introductory remarks, after which he presented Dr. Peter Roberts, New York City, who is a member of the International Committee of the Y. M. C. A., and is assigned to welfare work. The title of Dr. Robert's paper was "Teaching English to the Foreigner." Dr. Roberts explained his system of teaching the English language to foreigners and stated that this system had been quite generally adopted in different sections of the country. He emphasized the need of instruction in the commonplace details of everyday life and advocated discarding the use of textbooks prepared for schools and colleges.

An interesting paper entitled, "The Visiting Nurse," was read by Miss Mary K. Quick, Moundsville. Before adjournment was taken, a resolution was adopted expressing the sympathy and regret of the members, for the illness of Pres. Neil Robertson, who was detained at his home in Charleston. A committee was then appointed to prepare nominations for the election of officers the following day.

The Friday morning session opened at 10:30 o'clock and was devoted to the discussion of several important questions in coal mining, as follows:

1. What is the best roofing material for mine tenements?
2. Assuming the force system of ventilation, is a door regulator preferable to a box regulator?
3. Has the wisdom of the Compensation Law been proven by results so far obtained?
4. Are oil safety lamps to be preferred to electric safety lamps in gaseous mines?
5. Which is the best method of caring for the accumulation of dangerous gases in gob sections?

Officers Elected for the Ensuing Year

The discussion of these questions occupied a portion of the afternoon session. The election of officers, which followed, resulted in the choice of J. C. McKinley for president, for the coming year. In order to represent more satisfactorily the several mining districts of the state, the number of vice-presidents of the Institute was increased to five, and the following persons were chosen from the districts named:

Pocahontas district, Col. William Leckie, Leckie.
Kanawha district, Earl A. Henry, Charleston.
New River district, E. E. White, Glen White.
Fairmont district, George T. Watson, Fairmont.
Upper Potomac district, J. W. Bischoff, Elkins.

Prof. E. N. Zern, Morgantown, was reëlected secretary-treasurer. By the action of the Institute, Prof. Zern was authorized to secure the services of a stenographer to aid him in his arduous duties in promoting the interests of the Institute. In this connection, the members discussed the need of bringing the work of the Institute to the attention of the coal operators throughout the state, in such a manner as to impress them with its importance and advantage to the industry. Valuable suggestions were made by the members in respect to awakening a new interest and securing a more general attendance and support not only of the operators but of all mining men within the state. Some good work may be expected to be done along this line in the coming year.

What Would You Do If You Were the Boss?

THE problem illustrated in the cartoon from *Power* published below is one that every mine official has to meet on frequent occasions. It is an interesting and somewhat complicated situation that confronts the boss. All of the men before him are competent, loyal, of good character and good health.

The man in the chair is balancing in his mind "company duty," for he knows that a corporation must be human and recognize obligations of service, just as an individual must recognize them.

He is also carefully weighing the future value of each man's service; his ability to rise and meet unusual occasions, and his skill in dealing with his fellow-men.

The boss knows full well that his own success depends in large measure on his ability to surround himself with competent subordinates. Their mistakes reflect on him, and he must be responsible to the man higher up for *all* errors of the organization he has built.

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Each reply must be concise and contain not more than 500 words. The author's name will be published or withheld, just as he chooses.

Let us have answers from everyone to this most interesting question.

A Problem—Who Gets the Promotion?

Editorials

A Spurious Patriotism

We have a friend, who is not versatile but merely unstable. He has wandered around from one form of activity to another, lured by the specious brilliancy of projects he did not really understand and casting carelessly behind him opportunities more substantial, merely because he was able to weigh them more or less truly and, as a result, knew they would never prove bonanzas. He could believe anything he chose about distant, imponderable benefits, though they usually proved not merely delusive, but even actually unattainable, when pursued.

Our friend reminds us of one Commodus, who wore the imperial purple in Rome, who might have sought the dignity of being the greatest and most beneficent of a long line of emperors, few of whom were either great or beneficent. But, instead, enamored of the glitter of the amphitheater and the plaudits of the multitude, he chose to enter the arena and become a third-class gladiator.

With this preface we wish to speak of the enthusiastic spirit with which Americans have been urging themselves to enter into foreign markets. Look, we are told, at the success of Great Britain and Germany. Why should we not secure some of the trade which comes to them?

So one of our enterprising magazines, *System* by name, asked Sir George Paish's views on this subject. "It is all very easy to secure foreign trade," he replied in effect, "if you will only finance foreign enterprise. Pour your dollars into South America; give the merchants and manufacturers a long line of credit; build their railroads; erect their opera houses; open their harbors—and their trade will be yours."

And this is surely good advice—if we have the money to spend. Let us build up the Southern Hemisphere if we are satisfied that our work in the Northern is measurably complete. But if we think not, if we believe that we prefer to spend our money at home where we can watch it in businesses and among people we understand, we will not be so anxious to do what England and Germany have done.

In fact it has been stern, unrelenting, regrettable necessity which has forced the British and the Germans to do a world-wide trade. They did not have enough at home. We Americans would do better to congratulate ourselves on our home business, our home requirements, which have enabled us to conduct our enterprises without depending in large degree on foreign markets and getting the almost inevitable trimming which is the fate of those who invest in alien securities.

Some of us remember how the Barings and the Mildmays lost millions in South American securities and how other English bankers dropped other millions in the South after the Civil War. These are merely single instances of losses, for there is a continuous drain from all sources; oil, for example, in Calgary, rubber all over the tropical world and coal mines in the United States have severally removed the hard-earned cash from the pockets of the English, German, Dutch, French and Belgian people.

Let us then realize that American conditions are on the whole satisfactory and will not be modified materially until necessity causes a change. As profits decline in America, foreign investments will be more desirable and foreign trade will follow. Some of our products will be so desirable that they will make their way even where the British, German and other flags fly and also in those countries where the flags of those industrial nations are not seen outside the harbors and consulates.

We will not deny that there are some wonderful opportunities abroad, but we also know that there are splendid chances to lose money, much of it in fact destined by the investor to be expended abroad has been known to get little further than New York. Certain it is that our industries here need the money and can best be conducted with American capital. Why build up South America with United States savings and borrow five billions of British money to create our own industry?

We should not consider war as normal, but rather so regard peace; but this is certain—that while the war has crippled us severely, it would have been far more terrible had we a large foreign trade, investments in the lands of warring nations, larger indebtedness to belligerents and a merchant marine tied up in our harbors.

As good a creed as "America a world merchant" is "America for the Americans; our capital for our industries; our products for our people." However, it is not a very lofty or a very profitable gospel. It is as noble as "Every man for himself" and pursued to its ends would not rear a very lordly people.

So perhaps we might best continue to muddle along as before without any principles regarding foreign commerce, assured that when the times are mellow, Americans will, unquestionably, show their usual scent of an opportunity. Meantime, let us sympathize with the British and other nations, forced to risk their money abroad, compelled to rake the remote corners of the earth with a fine comb, needing to keep large fleets to protect their commerce and fearful lest a war should remove the basal supplies of their industries.

Reforming at the Wrong End

The principal duty of the Bureaus of Mines and Standards and the Geological Survey is to instruct. To do this they must first inquire. But on the whole of what good is inquiry if the person who makes it keeps the results to himself?

A regulation, newly enacted, requires all U. S. bureau officials to pay their own expenses when they attend conventions, unless those conventions are agricultural. The larger part of the work of governmental bureaus is not to add to knowledge but to disseminate it. How this can be done by officials kept immovably at one spot we cannot see. In fact, in view of these regulations we wonder whether Congress has these bureaus merely for the gratification and glorification of Washington, D. C., or

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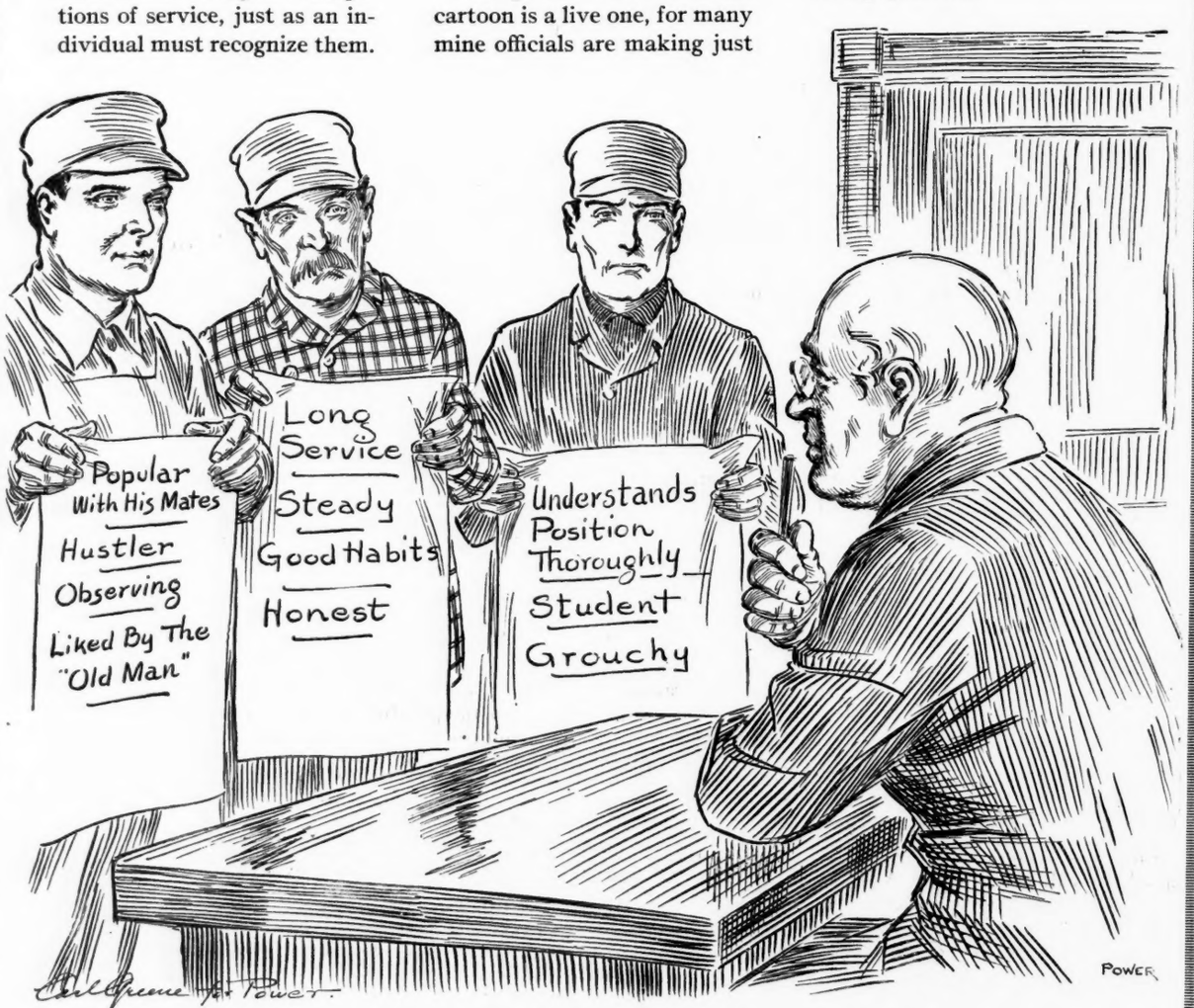

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With this preface we wish to speak of the enthusiastic spirit with which Americans have been urging themselves to enter into foreign markets. Look, we are told, at the success of Great Britain and Germany. Why should we not secure some of the trade which comes to them?

So one of our enterprising magazines, *System* by name, asked Sir George Paish's views on this subject. "It is all very easy to secure foreign trade," he replied in effect, "if you will only finance foreign enterprise. Pour your dollars into South America; give the merchants and manufacturers a long line of credit; build their railroads; erect their opera houses; open their harbors—and their trade will be yours."

And this is surely good advice—if we have the money to spend. Let us build up the Southern Hemisphere if we are satisfied that our work in the Northern is measurably complete. But if we think not, if we believe that we prefer to spend our money at home where we can watch it in businesses and among people we understand, we will not be so anxious to do what England and Germany have done.

In fact it has been stern, unrelenting, regrettable necessity which has forced the British and the Germans to do a world-wide trade. They did not have enough at home. We Americans would do better to congratulate ourselves on our home business, our home requirements, which have enabled us to conduct our enterprises without depending in large degree on foreign markets and getting the almost inevitable trimming which is the fate of those who invest in alien securities.

Some of us remember how the Barings and the Mildmays lost millions in South American securities and how other English bankers dropped other millions in the South after the Civil War. These are merely single instances of losses, for there is a continuous drain from all sources; oil, for example, in Calgary, rubber all over the tropical world and coal mines in the United States have severally removed the hard-earned cash from the pockets of the English, German, Dutch, French and Belgian people.

Let us then realize that American conditions are on the whole satisfactory and will not be modified materially until necessity causes a change. As profits decline in America, foreign investments will be more desirable and foreign trade will follow. Some of our products will be so desirable that they will make their way even where the British, German and other flags fly and also in those countries where the flags of those industrial nations are not seen outside the harbors and consulates.

We will not deny that there are some wonderful opportunities abroad, but we also know that there are splendid chances to lose money, much of it in fact destined by the investor to be expended abroad has been known to get little further than New York. Certain it is that our industries here need the money and can best be conducted with American capital. Why build up South America with United States savings and borrow five billions of British money to create our own industry?

We should not consider war as normal, but rather so regard peace; but this is certain—that while the war has crippled us severely, it would have been far more terrible had we a large foreign trade, investments in the lands of warring nations, larger indebtedness to belligerents and a merchant marine tied up in our harbors.

As good a creed as "America a world merchant" is "America for the Americans; our capital for our industries; our products for our people." However, it is not a very lofty or a very profitable gospel. It is as noble as "Every man for himself" and pursued to its ends would not rear a very lordly people.

So perhaps we might best continue to muddle along as before without any principles regarding foreign commerce, assured that when the times are mellow, Americans will, unquestionably, show their usual scent of an opportunity. Meantime, let us sympathize with the British and other nations, forced to risk their money abroad, compelled to rake the remote corners of the earth with a fine comb, needing to keep large fleets to protect their commerce and fearful lest a war should remove the basal supplies of their industries.

Reforming at the Wrong End

The principal duty of the Bureaus of Mines and Standards and the Geological Survey is to instruct. To do this they must first inquire. But on the whole of what good is inquiry if the person who makes it keeps the results to himself?

A regulation, newly enacted, requires all U. S. bureau officials to pay their own expenses when they attend conventions, unless those conventions are agricultural. The larger part of the work of governmental bureaus is not to add to knowledge but to disseminate it. How this can be done by officials kept immovably at one spot we cannot see. In fact, in view of these regulations we wonder whether Congress has these bureaus merely for the gratification and glorification of Washington, D. C., or

to promote the advance of industry where men are actually at work.

In fact, all our economy today involves the idea that anything wasted on the public outside the big cities is to be deplored whether it be money on a post office at Punxsutawney, Penn., or the time of a lecturer at Terre Haute, Ind. But after all, the people who live in these rural communities *are* worthy of some consideration. They *also* pay taxes and also, as has been often deplored, have votes.

Congress has shown its sense of this fact by relieving the agricultural convention from bureaucratic absenteeism. Let the national legislature also show it by making it possible for the Bureau of Mines and the Geological Survey and other like organizations to do their work effectively wherever voters who are interested are to be found. Incidentally the members of those bureaus will learn something about mining and geology and even about the plain people which they could never learn in the civic centers to which Congress would confine them.

Many organizations are doing work as valuable in their sphere as is the federal government. One of them, the American Mine Safety Association, was even fathered by the federal Bureau of Mines itself, and was an attempt to induce the operator to second the efforts of the United States government. Now even the officials of that organization who are still U. S. employees cannot look to the government for their traveling expenses and from the very first have had to be relieved of membership dues. This is a disgraceful situation for a government which is always condemning the coal industry for a lack of liberality.

The Congressional—we will not say the national—attitude to learned and beneficial societies contrasts unfavorably with that of some foreign countries. There a subsidy is given or a secretary is paid, and the educational work is thus gratefully acknowledged. We do not, however, urge any such contribution to our institutions.

The dues in none of our national institutes are paid for their employees by the government. The officials must appear either as guests who are unwilling to pay their due part of the score or, if prominent officials, must expend their already inadequate salaries in the membership fees of a dozen different national organizations for the good of their niggardly master.

It is all wrong. Bureaus are intended to instruct industry and to that end to become acquainted with it. If not for that, let them be swept away. What use is there in our expending our money on them?

A Little Help Would Be Welcomed

It is doubtful if there has been a time within the memory of any of us when there have been as many coal miners on the verge of actual want as are to be found at the present time.

It is true that there are not many idle miners, but most mines are running on very slack time, so slack in fact that the employees are hardly able to buy meat and bread with their earnings.

Miners are as a rule rather improvident, and no matter how large their previous earnings, slack work always finds many of them unprepared.

The circumstance that brought the condition of our miners most forcibly to our attention was the attitude of the coal-mining camps toward the Belgium relief fund. When it comes to raising funds for the relief of the distressed, coal-mining communities have always given most liberally; in fact, it is doubtful if any other class of men give as liberally, taking everything into consideration. But just now our coal miners have nothing to give, and the Belgian solicitors, in most cases, have met with disappointment.

The coal-mining industry never fails to get its share of publicity, but in the present crisis, it seems to have escaped.

The papers have been full of details about lack of employment in the steel industry, the iron industry, and manufacturing industries of all description, but that there is suffering in the mining camps has escaped their notice.

A little publicity of the right sort, just now, might be welcomed. Among other things it would show that company stores and company houses have been responsible in many cases for men without funds or credit being able to keep the wolf from the door and the door under a roof.

Judge Dayton Protects Coal Interests

The decision of Judge Dayton continuing the receivership of the Four States Coal Co., of West Virginia, for six months longer meets the hearty approval of coal men everywhere. This judicial ruling affords the company a new lease of life, and may save several hundred thousand dollars to the company's unsecured creditors.

The Four States Coal Co. is a valuable property and in normal times should be able to rapidly liquidate its burden of indebtedness. John H. Jones, the chief figure in the development and operation of the company's mines, is a coal manager of long experience and recognized ability. It is to be hoped that before the new extension in time has elapsed, the company will effect a satisfactory reorganization so that no such serious losses will be brought to the present stockholders.

It is gratifying to know that some of our courts are ready and willing to recognize that the present time is not propitious for the forced sale of valuable mining or industrial property if such an unfortunate outcome can in any way be avoided or postponed. It is the duty of everyone, in these times of stress, to extend a helping hand whenever and wherever possible. We, therefore, commend the wisdom and forbearance of Judge Dayton's decision.

Carl Scholz Again Heads Mining Congress

The American Mining Congress, at its recent meeting in Phœnix, Ariz., reëlected Carl Scholz, of Chicago, as president. No more fortunate selection could have been made, for Mr. Scholz has proved himself an organizer and executive of superior rank. Some of the most important work in its history was accomplished by the "Congress" during the past twelve months, and its finances have been immeasurably strengthened. We congratulate the Congress and Mr. Scholz and prophesy that 1915 will be the best year in the life of the American Mining Congress.

The 40c. Reduction in Anthracite Freights to Philadelphia

SYNOPSIS—After a rather weak defense on the part of the railroads, the Pennsylvania State Commerce Commission has ordered a heavy cut in freights to Philadelphia. Preparations are under way to carry the case to higher courts.

The decision of the Pennsylvania Public Service Commission that the anthracite roads must reduce their freight rates to Philadelphia 40c. per gross ton, is one of the most sweeping reductions in rates ever made. That the railroads will appeal from this decision and carry it to the Interstate Commerce Commission and the courts if necessary, is a foregone conclusion; they cannot afford to do otherwise.

The amount of anthracite coal consumed in Philadelphia in 1913 was 3,775,701 tons, practically all of which was used for domestic purposes and for heat, light and power in office and store buildings, apartment houses and hotels; the use of anthracite as a steam fuel for manufacturing plants has almost entirely given way to the bituminous coals of lower ash and higher heat value, or to mixtures of anthracite and bituminous, the former added in order to lessen possible smoke production.

The reduction in freight of 40c. per ton applies to pea coal and all prepared sizes; for the smaller sizes, the reduction is from 21 to 25c. per ton. Taking the proportions of these sizes as shipped from the mines in 1913 and applying these figures to the Philadelphia consumption (for which no tonnage of different sizes is available) we have the following:

	Gross		Philadelphia
	Tons	%	Tons
Prepared sizes	43,688,694	61.7	2,329,607
Pea	8,142,571	11.2	422,878
Sizes smaller than pea	18,927,047	27.1	1,023,216

On this basis, the total freight reduction would amount to about $1,356,798. How much of this amount will be saved to the people, remains to be seen.

The railroads do not seem to have made a very strong defense of their position. The fact stated by the Commission in its opinion, that the present rates had been in existence for between 17 to 24 years, without any revision must have told against them.

The admission of the railroad officials that they did not know, nor had they ever tried to ascertain the cost of transportation on anthracite coal to Philadelphia, that it was practically impossible to ascertain this cost, was certainly a rather unwise statement, to say the least.

The Question of a Differential

Charging a lower rate on coal for shipment "beyond the Capes" than that for local delivery is entirely in line with the practice elsewhere under similar conditions and its reasonableness has not been questioned. The Norfolk & Western, for instance, as well as the Chesapeake & Ohio and Virginian Railways have always had a lower rate on coal for shipment beyond limits of Chesapeake Bay than for Norfolk or Newport News, $1.40 per gross ton being the rate for outside coal as against $1.50 per net ton for local delivery.

The basis of such differentials is, of course, the necessity of meeting competition at points beyond the Tidewater shipping port. But on all the prepared sizes of anthracite, their is no competition except with anthracite; it is only the small steam sizes that compete with bituminous coals in the coastwise markets.

As far as the exports of anthracite coal from Philadelphia are concerned, the amount is so small that they need not be considered, only 63,481 tons last year. And there never will be a foreign market for anthracite. It is not used in South America and the European countries can get their supplies from Great Britain, which has a better grade of anthracite than any in this country.

A similar differential between local and outside rates exists at Philadelphia on bituminous coals, but no mention is made of this fact in the decision, although the rates per ton-mile for export and outside bituminous coal are given.

The findings of the accounting experts, employed by the Commission, as to the transportation costs on anthracite coal to Philadelphia, as compared with rates per ton-mile on other roads, apparently told strongly against the anthracite railroads' case. The rate of $1.55 per gross ton, a 2.5 mills per ton-mile on the Chesapeake & Ohio Ry. from Marrowborn, Ky., to Newport News, a distance of 623 miles (not 673 as given) is rather beside the question, as no coal is shipped over that route.

Prejudice against the Hard-Coalers

There is another point that does not seem to have been considered by the Commission which is, that it costs the railroads more to deliver anthracite coal to local points by rail than to the coal piers. This is due to the greater amount of switching on local deliveries, as well as to the interest and depreciation on city tracks and switches.

As to the opinion of the people generally, there can be no question but that there is a deep-rooted feeling among all classes against the anthracite roads and this feeling was bound to have an effect upon the Commission and to have had a certain influence. The statement by the Commission that the evidence in this case points strongly to the conclusion that the respondent railroad companies exercise an extended influence over the output and disposition of anthracite coal, is certain to intensify the general feeling of distrust.

If the opinion of the Commissioners is to be contested by the railroads, they should put up a much stronger line of evidence than they did and they should make greater efforts to educate the general public as to the true state of affairs from their standpoint.

The "Boston News Bureau" makes the following comment on the decision: "The new order will disturb a number of transportation questions which have been thought to have been settled in the past 15 years by legislation and regulation, state and national. The long and short haul, lake and rail rates, the interchange traffic between railroads, all questions as to competitive water and rail business and many other apparently settled transportation problems are reopened by the order. The possibility that the Interstate Commerce Commission may at any time hand down a decision in reference to interstate anthracite rates does not tend to make the future clearer."

Discussion By Readers

Mining Laws, Legislation and Mine Regulations

Letter No. 12—I have been much interested in reading the many letters relating to mining laws and mine regulations. I want to say, here, that the Bituminous Mine Law (1911) of Pennsylvania is, in my opinion, the best that I have ever read. I am fully convinced that, if the requirements of this law were fulfilled, there would be very few mine accidents, notwithstanding the recognized hazard of this industry. When one reflects on the importance of taking precautions to secure and maintain certain conditions in the mine, it is strange that mine officials will permit gross violations of the law to pass unnoticed. An experience gained in 16 mines of this state allows me to say that the requirements of the mine law are not fulfilled in any one of them.

I recall an accident that is a simple illustration of what occurs almost every day in our mines. In this case, the fireboss had inspected the mine for the second time that day, while the men were at work. The assistant mine foreman had also made an examination of the workings the same day; but neither of these men had found anything wrong. It so happened that in one of the rooms, in this mine, a thin rib of coal had been left to shut off the gob and prevent the coal that was mined from mixing with the waste. At the time to which I refer, two men were drawing back the rib in this room; and they had evidently decided to mine this thin rib of coal next to the gob, to a sufficient depth to enable it to fall before morning. While engaged in this work, the coal toppled over and caught one of the men, injuring him so badly that he died three hours later.

In this case, the question may be asked, Who was to blame? I may say that the superintendent and mine foreman severely censured the fireboss, since the two miners had loaded from eight to ten wagonloads of coal off this barrier, after the fireboss had examined the place. I may add, however, that if this fireboss had found danger to exist in the place, he would have withdrawn the men and placed the required danger signal at the entrance to prevent anyone from entering the room without being warned of the danger.

In the same connection, I want to say that, in my opinion, "assistant mine foreman," referred to in Letter No. 8, COAL AGE, Dec. 12, p. 958, after discovering the need of securing the roof in a working place in the mine, should have remained long enough to see that his orders were carried out and the place made safe for work. While it is true that many mine officials would hesitate to take action against the man who escaped injury, in the first case mentioned, I believe this should be done in order that he will not try the same trick again, and thereby endanger not only his own life, but the lives of all in the mine.

According to statistics, the majority of mine accidents are caused by falls of roof and coal. It is clear, therefore, that mine laws and regulations should be specific in regard to the removal of dangerous coal, rock and slate; and that these laws should be strictly enforced and obeyed. In my opinion, the miner should be held responsible, to a certain degree, for the condition of his working place; and if he neglects to timber or otherwise make his place safe for work, I believe that he should be compelled to serve a jail sentence, without the necessity of prosecution.

Let me say that it matters not what is preached or taught, we must face the fact that accidents still continue in mines. Then, let us have legislation that will compel miners and mine officials to make a more thorough inspection of working places and to secure all dangerous roof and coal. In other words, let us fix a higher standard of inspection of all working places and the most improved methods of timbering the roof and coal. I believe the adoption of this policy in every mine would soon put a stop to miners taking the risks they are prone to assume, especially if examples were to be made of neglect or willful violation of the known rules and regulations in our mines.

It is not my desire, in what I have said, to lay the blame wholly on the miner, as much of the blame must be laid at the door of the superintendent, mine foreman or his assistant and the firebosses employed in mines. However, there is too great a tendency to shift the blame, in such cases. Therefore, mine legislation should be such as to hold the employer and employee proportionately responsible for the maintenance of safe conditions throughout the mine.

PENNSYLVANIA FIREBOSS.

———, Penn.

Letter No. 13—I was much impressed by Letter No. 8, relating to mining laws, COAL AGE, Dec. 12, p. 958. I read this letter with careful attention. It certainly teaches every coal-mining man of wide experience, regardless of whether he is a miner or an operator, that it is useless to have good laws compelling the safe operation of a mine, unless the miners themselves will obey the laws and observe carefully the mine regulations designed for safety.

No doubt many will argue that any miner who will refuse to obey the company's rules, or who neglects to follow the mine foreman's orders, is an "undesirable" mine worker and should be punished to the full extent of the mine law. In some few cases, perhaps, a miner guilty of disobeying orders or violating rules and regulations is discharged and not permitted to again enter the mine; but, too often, no notice is taken of the matter further than to reprimand the offending miner, who is then permitted to return to his work.

It is easy to see that such law-violating miners are constantly taking chances, because they know the time when the mine foreman, or one of his assistants, is liable to visit his working place. As soon as his place has been inspected, such a miner will proceed at once to follow his own inclinations; and, as a result, a "windy shot"

occurs or a loose piece of slate falls, owing to the miner's neglect to follow the foreman's orders to stop work at once and set the necessary posts to secure the top. I would like to ask, Can anyone tell me who is responsible for such acts of recklessness and disobedience of orders? In most cases, the law does not indicate who is the responsible party.

Considering the mine as a whole, the greatest number of accidents happen in the working places, after these have been inspected, and in the absence of any mine official. There are, in fact, comparatively few accidents that happen on the main roads and entries of mines, caused by defective installation of electric wires, or improper timbering, or lack of timbering, or insufficient ventilation, or other cause that can be attributed to the improper management of the mine.

I witnessed such an accident some time ago, where a driver was squeezed between the car and the rib, because sufficient room had not been provided at the side of the track for one to pass the cars. For such an accident, the management of the mine should be held responsible. Another instance of company liability is where an incompetent foreman permits a man to work in a place that is dangerous, or orders him to draw timber where an accident is liable to occur.

The employment of a large number of foreigners, in a coal mine, makes it important for the mine foreman in charge to carefully inspect the work of this class of employees. He must acquaint himself with their habits and methods. He can judge largely from their output of coal and the appearance of their working places. For example, in respect to shooting the coal, two experienced miners can dislodge from 100 to 135 tons of coal, per keg of powder used, assuming a 4-F grade of black powder and a reasonable thickness and shooting quality of the coal. Estimating on such a basis, an intelligent foreman can soon tell who is "bumping" his coal off the solid without properly mining the seam. Such practice is particularly dangerous in a gaseous mine.

In every coal-mining state there should be a law compelling all miners to have a certificate showing their capability to mine coal in a safe and proper manner. Many Austrian and Italian miners, now employed in mines in this country, never saw the inside of a mine before coming here. They are unacquainted with the requirements of the mining law and, in many cases, cannot speak, read or write the English language. It requires a closer watch to see that these men do nothing to endanger themselves and other workers in the mine. This is one of the hardest problems the mine foreman has to meet.

In most cases, when a man is injured or killed as the result of his own neglect or disobedience of orders, he or his family are led to blame the company; and suit is frequently brought to recover damages. An example of this recently occurred in one of our mines where a man was crushed under a fall of slate, owing to his own neglect to properly support the roof. In another instance, a company recently paid the injured man $500 and all incidental expenses for an accident that was easily attributable to his own carelessness and neglect. I have offered these comments in the hope that they may help to secure the needed improvements in state mining laws, for the protection of both the employer and the employed.

J. M.

———, Ala.

The Foreigner in Mining

Letter No. 10—I have been greatly interested in reading the previous letters relating to the foreigner in coal mining. I understand the term "foreigner," as used in this connection, to refer to that class of immigrants that come from central or southern Europe, such as Poles, Slavs, Austrians and Italians.

While the letters discussing this subject have been interesting, most of them showing a broad knowledge of the subject, they have all emanated from those who view the condition of the foreigner from one and the same standpoint. These letters have come from those in direct contact with the foreigner and, in many cases, from the employers of this class of labor. I believe that the views of the more educated foreigner would be interesting and valuable. There are, in America, thousands of foreign-born mining men who have become Americanized, and who have been educated according to American ideas, and have adopted American standards of living.

My aim in the present letter is to appeal to this class of the foreign element to give us the benefit of their suggestions. Such educated and Americanized foreigners should know the best methods to adopt to reach the uneducated classes of their races. They should be able to suggest what treatment will lead the foreign immigrant to an appreciation of American conditions and American culture. They should be able to point out clearly the methods often employed that may, however well intentioned, embitter the very ones they are intended to interest and educate.

Knowing the impartiality of COAL AGE, I make this suggestion in the full assurance that such contributions will be gladly welcomed. Such an intelligent summing up of the needs, aspirations and difficulties encountered by the foreigner in his transition from his previous environment to American citizenship, as told by those who have successfully passed through the ordeal, cannot fail to interest all coal-mining men and especially employers, superintendents, and foremen who are in daily contact with this class of labor.

At this time, especially, when so many improved methods and so much improved equipment are being used in mining, requiring intelligence and skill on the part of the worker, any suggestion relating to the training and education of mine employees is worthy of earnest consideration and effort in their behalf. This work has gained a great impetus in recent years and bids fair to accomplish much, in the future, for all classes of coal-mining men.

My own experience with the foreigner is somewhat limited, and, for this reason, any theory I might advance, as to their treatment, would necessarily lack weight. However, I am fully convinced of the great value of education, in the treatment of the foreigner. The methods and details of proceeding must, of course, be suited to conditions as they exist. My experience in life has taught me that *education is the greatest leveler of humanity*. Therefore, whatever methods are used to improve the condition and to utilize to greater advantage this class of labor in mining, the first aim should be to *educate them*.

In studying the question of foreign labor, we must remember that ignorance cannot appreciate knowledge,

but knowledge can always measure ignorance. It is therefore incumbent on those who have enjoyed the advantages of education to do everything possible to uplift those whom adverse conditions have deprived of this advantage. It must be remembered that whether or not there is a desire to learn, the faculty of learning exists; and the task of teaching is not, therefore, a hopeless one, though it may have limitations.

In closing, I want to relate an incident that may not only be suggestive but helpful. I recall a man of my acquaintance who had a college education and had reared and educated a family of children, instilling into them *an appreciation of the best things* and *a desire to accomplish great things.* Until, one day, he told me something of his earlier life, I could not understand his genuine sympathy with the "knights of the road." Hoboes, tramps of all sorts and conditions were received by him and given food, clothing and shelter; but, more than this, he conversed with them easily and willingly, as with those of his own circle and acquaintance. The early life of this college-educated, cultured man was associated with the gypsies. Born in a covered wagon while his father was on a horse-trading trip, his boyhood was passed in a community where the men spent their time in smoking and were supported by the women who wove baskets for a living.

The picture was a familiar one to me as it recalled a summer's vacation spent near a village of low huts, with earth floors, a few boxes for seats and a bunk for a bed. The women were barefooted, unkempt and clad in faded and dirty clothes and surrounded by dirtier children. On the outskirts of the village were picketed a few raw-boned half-starved horses. Calling to mind this picture, I could not but wonder how this man had escaped such an environment. He could not explain, except to say that he had *a desire to grow, to know and to accomplish.* Not only had he risen himself, but he had elevated his children to a higher plane of living, so that they never knew the ignorance, drudgery and immorality that marked their father's early life.

The same uplift is possible in respect to the foreigner. Educate him and he'll see to it that his children are educated. Instruct him in better and more sanitary ways of living, and his children will follow. Teach him the principles of American citizenship and culture, and a generation of good citizens will be produced.

America is, in a sense, *the melting pot of nations,* and it is important to recognize that education is a factor that makes for higher ideals and a higher standard of living, morally and industrially.

GEO. N. LANTZ.

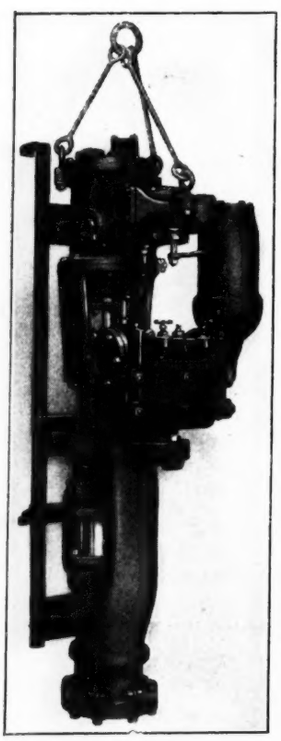
New Straitsville, Ohio.

Study Course in Coal Mining

BY J. T. BEARD

The Coal Age Pocket Book

Sinking Pumps—The class of pumps commonly known as "sinking pumps" differ from other types only in their form of construction, which adapts them to hanging in a shaft, during the process of sinking.



SINKING PUMP

Sinking pumps are mostly of the **plunger type,** because this class is less subject to wear in the handling of the shaft water, which always contains more or less sand and grit. In the **Cameron pump** shown in a front view on this page and in vertical section on the opposite page, the wear of the packings is greatly reduced by the sand pockets, located above the single stuffing-boxes.

Another distinguishing feature of this pump is the form of hinged bolts used to secure in place the suction and bottom covers, the valve-chest bonnet and stuffing-box caps.

In this pump, also, the discharge or column-pipe and air-chamber connections are interchangeable. Also, the steam supply and discharge lines can be connected on either end of the steam chest. These simple provisions greatly facilitate the handling of the pump in a shaft where room is limited and every possible means must be employed to save time and labor and economize space. This pump is an outside center-packed plunger pump.

The two valves shown above the valve chest are for the purpose of priming the pump. It is claimed that these priming valves, as arranged in the Cameron pump, are a distinct advantage over the usual arrangement, inasmuch as they permit the water from the column pipe to flow into the valve chest and thence into the pump barrel, without entering the suction hose of the pump. As the latter is designed to resist collapse only, it would frequently be in danger of bursting if subjected to the full pressure of the column pipe when priming the pump.

The Coal Age Pocket Book

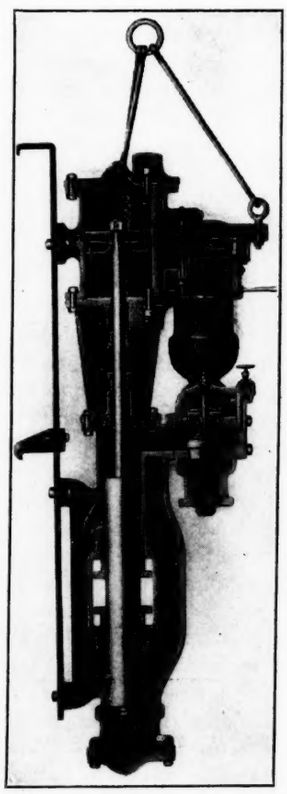
Use of the Sinking Pump—Sinking pumps are designed to be suspended in a shaft while the operations of sinking are in progress. Attached to the end of a cable, the pump is lowered to within 15 or 20 ft. of the bottom, where it is hung on cross-timbers or buntons, by means of the suspension frame or hangers shown in the accompanying figures. The pump is then ready for operation when the steam lines and suction hose are connected.

Operation of the Pump—To start the pump, steam is turned on, slowly at first, and the priming valves opened to allow the water in the column pipe to fill the valve chest and the pump barrel. As soon as the pump begins to draw or "takes water," the priming valves are closed and no further attention is required. It is important when shutting down a pump in cold weather to open the drips so as to enable the water to drain off and avoid trouble from freezing.

Requirements in Sinking Pumps—A sinking pump, above all, must be strongly built to withstand the rough usage it will receive in the shaft, owing not only to collision with shaft timbers when lowering or hoisting the pump, but because of possible injury from the blasting of rock to which it is constantly exposed. There must be no projecting valves, levers or other light parts that may be easily broken off by contact with timbers or flying rock.

The construction of the pump must be simple and such as to give ready access to all valves and stuffing-boxes, for the purpose of removing any obstruction or renewing worn parts or packing.

The size of the pump shown here is 12x7x13 in.; its weight is 3400 lb.; and its capacity at ordinary speed is 200 gal. per min.



SECTIONAL VIEW

Inquiries of General Interest

Hoisting in Slopes and Shafts

If an engine of 300 i.hp. will hoist a load of 30 tons, gross weight, from a slope having a grade of 45 per cent., how many tons, gross load, will the same engine hoist in a vertical shaft? Assume the length of the slope and the depth of the shaft are each 500 ft.

JUSTUS VOLK.

Boswell, Penn.

In answering this question, we will assume that, in the slope, the gross weight W_1 includes the weight of the loaded cars and the rope; and, in the case of an unbalanced hoist in a single-compartment shaft, the gross weight W_2 includes the weight of the loaded cars, cage and rope hanging in the shaft; or in the case of a balanced hoist in a double-compartment shaft, the gross weight W_2 includes only the unbalanced weight of the coal hoisted and the rope hanging in the shaft.

Then, assuming that the engine is operated at the same speed and develops the same power when hoisting in the shaft as when hoisting in the slope; but that the arrangement is such as to provide the required speed of winding or velocity of rope, v_1, in the slope, and v_2, in the shaft; and taking the inclination of the slope or the slope angle as A, we have, since the work performed is the same in each case,

$$W_2 v_2 = W_1 v_1 \left(sin\ A + \frac{cos\ A}{40} \right)$$

Applying this formula to the case in hand, it is necessary, first, to calculate the slope angle for a 45-per-cent. grade. Estimating the grade as the vertical rise per 100 ft. horizontal distance, the tangent of the slope angle for a 45-per-cent. grade is $tan\ A = 0.45$; and $A = 24°\ 14'$. Hence, $sin\ A = 0.41045$ and $cos\ A = 0.91188$.

Now, assuming a speed of hoisting in the slope, $v_1 =$ 8 ft. per sec., and in the shaft, $v_2 = 20$ ft. per sec., and substituting values in the above formula, we have, for the gross load W_2 that can be hoisted in the shaft, by this engine, under the assumed conditions,

$$W_2 = \frac{30 \times 8}{20} \left(0.41045 + \frac{0.91188}{40} \right) = say\ 5\ tons$$

In considering such a question as the above, it is important to remember that winding engines such as are ordinarily used for hoisting coal from slopes or shafts, are commonly designed for a piston speed varying from 600 to 800 ft. per min. In coal-mining practice, the speed of the mine cars commonly varies from 475 ft. per min., or 8 ft. per sec. (5.4 mi. per hr.), to 625 ft. per min., or 10.4 ft. per sec. (7.1 mi. per hr.).

On the other hand, the speed of hoisting in vertical shafts may vary from 15 to 50 ft. per sec., depending on the depth of the shaft and the general equipment and requirements in respect to the desired output of coal. In the above solution, we have assumed as the speed of winding, in the slope, 8 ft. per sec., and, in the shaft, 20 ft. per sec. It is possible to assume other speeds and obtain varying results by substituting other assumed values in the above formula.

The Ramsay Revolving Car-Dump

I was greatly interested in the article of H. S. Geismer, COAL AGE, Sept. 12, p. 412, describing the Ramsay revolving car-dump, in operation at the Woodward iron mines. I notice it was also stated that several of these dumps are in operation at coal mines in different states; namely, Pennsylvania, Tennessee, Alabama and Utah. Mr. Geismer has described a number of the advantages of this style of dump, but failed to mention the *disadvantages* of which some doubtless exist.

There are several questions that arise in my mind, in regard to which I should like more information. For instance, how is rock or other waste handled; or, is this dump adapted only to the handling of material containing no waste?

Another question is, what kind of coupling is used between the cars? An ordinary link-and-pin coupling could not be used evidently, as the pin would fall out when the dump turned over. If a pin is used having any sort of locking device, would it not be necessary to have a man inspect the trip as it comes from the dump, to make sure that none of the pins have worked loose, which would allow a portion of the trip to run wild down the slope?

When and how are the cars oiled; and does the use of this style of dump very materially reduce the working force required on the tipple, as compared with that required in the operation of the crossover dump? These are some of the questions I would like answered.

M. L. O'NEALE,
Coal City Mining Corporation.

Coal City, Ala.

Replying to the above questions which were submitted to him, Mr. Ramsay states that where it is desirable to provide for the handling of waste material, this can be accomplished by installing a movable apron that could be adjusted to carry such material to the proper chute. This was not done at the Woodward mine, as there was no waste material to be handled.

Mr. Ramsay also states that the inclination of the track on the Woodward dump provided a sufficient tension in the car couplings to prevent the pins from dropping out when the dump turned over. In this arrangement of the dump, there is no necessity for a locking device to secure the pin, and no inspection of the trip is required after dumping. In the use of this dump, no accident from this cause has ever been reported.

The H. C. Frick Coke Co. has recently installed one of these dumps at one of their mines in the Connellsville region. The dump has a capacity for handling 18 cars at a time. The cars are oiled in the mine and but one man is required on the tipple to weigh and dump the trips and remove the checks from the cars.

Examination Questions

Miscellaneous Questions

(*Answered by Request*)

Ques.—How should explosives and detonators be handled and taken into a gaseous mine?

Ans.—Detonators should never be carried into the mine in contact with or in the same receptacle with powder or other explosive. Detonators should be carefully wrapped and carried in a small box or tube where they will be protected from an accidental blow or friction with other material.

Only sufficient dynamite or powder should be carried into the mine, at one time, for use during that shift. This amount should not ordinarily exceed 5 lb. The explosive should be carried in a small canister or closed can, which must be carefully protected from any undue jar or blow, or from contact with electric wires. Any receptacle containing detonators or explosives should be kept in a wooden box and away from open lights. Dynamite cartridges when not in use should be laid down and not stood on end, as in the latter position the nitroglycerin has a tendency to leak from the cartridge.

Ques.—The water-end of a certain pump has a diameter of 8 in. If this pump is run at a piston speed of 100 ft. per min. and the efficiency of the water-end is 90 per cent., how many gallons of water will the pump discharge in a minute?

Ans.—The sectional area of this pump is $0.7854 \times 8^2 = 50.26$ sq.in. At a speed of 100 ft. per min., the piston displacement is $50.26 \times 100 \div 144 = 34.9$ cu.ft. per min. If the water-end of the pump has an efficiency of 90 per cent., the discharge is $34.9 \times 0.9 \times 7.48 =$ say 235 gal. per min.

Ques.—If the water-end of a pump is 10 in. in diameter and its stroke 4 ft., the efficiency of the water-end being 85 per cent., how many gallons per minute will this pump discharge when making 48 strokes per min.?

Ans.—The sectional area of the water-end is $0.7854 \times 10^2 = 78.54$ sq.in. The efficiency of the water-end of the pump being 85 per cent., the discharge of this pump is

$$\frac{0.85\ (78.54 \times 4 \times 12 \times 48)}{231} = \textit{say } 666 \textit{ gal. per min.}$$

Ques.—Describe, in detail, the duties of a mine foreman.

Ans.—To describe a mine foreman's duties, in detail, would require a small volume. They are, briefly, as follows: A mine foreman should devote his entire time to the supervision of the operations and equipment of the mine in his charge. He should hire and personally examine all the miners employed in the mine. He must have a thorough acquaintance with the provisions of the mining law and a thorough knowledge of every portion of the mine and its equipment. He must so order the mining operations that the work will be conducted with the greatest safety to the men and the largest output of coal be produced at a minimum cost.

As far as possible, he must personally superintend the operation of the mine and inspect all working places, haulage roads, travelingways, giving particular attention to the condition of the timbers supporting the roof in the entries and working places throughout the mine. He must see that the mine is properly ventilated and that the air is conducted to the working face in such quantities that there shall be no dangerous accumulations of gas in the workings or in any of the abandoned and void places in the mine. He must see that the mine is properly drained and that all needed material is promptly supplied to the miners at their working places. He must examine and sign the daily reports of the firebosses, to assure himself that the mine is being operated in compliance with the requirements of the law. He must attend to the prompt removal of all dangers reported to him or withdraw the men from such places until this can be accomplished.

Ques.—In what velocities of the air current do the respective safety lamps used in mines become unsafe?

Ans.—The unbonneted Davy lamp is unsafe in a current having a velocity exceeding 360 ft. per min. The unbonneted Clanny lamp becomes unsafe when the velocity exceeds 480 ft. per min. Different types of bonneted safety lamps have been found to withstand velocities varying from 1500 to 2000 ft. per min., depending upon the particular form of construction of the lamp and chimney. The type of safety lamp known as the Marsaut, multiple-gauze chimney, has been found to safely withstand current velocities varying from 2000 to 3000 ft. per min. These represent the principal types of lamps, now in use, in numerous varieties, in coal mines. The velocities given refer to pure air. When gas or dust is present in the air, the safe limit of current velocity to which the lamp is exposed is reduced. Much depends, also, on the condition and degree of perfection of the lamp.

Ques.—Is it possible for an explosion in a safety lamp to be of sufficient force to pass the flame through the gauze?

Ans.—Yes. This is most apt to occur when withdrawing a lamp from a body of "sharp" gas or where the proportion of gas to air is such that the mixture is above the maximum explosive point. The entrance of fresh air into the combustion chamber of the lamp when the latter is being withdrawn from such a mixture increases the explosive condition within the lamp chimney; and, as a result, a violent explosion may occur in the lamp that will force the flame through the gauze of the chimney.

Ques.—Why is it that marsh gas is generally found lodged near the roof and carbon dioxide near the floor in a mine?

Ans.—This is because of their relative specific gravities. Marsh gas being lighter than air (sp.gr. 0.559) has a tendency to accumulate at or near the roof. For the same reason, carbon dioxide, being heavier than air (sp.gr. 1.529), has a tendency to accumulate at the floor or in other low portions of the workings.

Coal and Coke News

Washington, D. C.

The Interstate Commerce Commission has handed down its decision in the so called 5 per cent. rate case, granting to the roads the desired 5 per cent. advance east of the Mississippi River except as to certain selected commodities. But as already forecast, these exceptions include practically all the heavier products, including first and foremost coal and its associated products for reasons already familiar to every student of the coal industry and its problems.

The essentials of this important decision in so far as they affect the coal industry (after the language in which the Commission announces the granting of the advance), are as follows:

While we differ as to the relative importance to be attached to the various considerations presented, we agree in the conclusion that, by virtue of the conditions obtaining at present, it is necessary that the carriers' revenues be supplemented by increases throughout official classification territory. Whatever the consequences of the war may prove to be, we must recognize the fact that it exists, the fact that it is a calamity without precedent, and the fact that by it the commerce of the world has been disarranged and thrown into confusion. The means of transportation are fundamental and indispensable agencies in our industrial life and for the common weal should be kept abreast of public requirements.

The original report, besides approving a rate increase in central freight association territory, suggested 10 sources of additional revenue for all carriers throughout official classification territory; the present report, recognizing the existence of a new situation since July 29, acquiesces in a territorial extension of the relief granted to the central freight association lines by permitting the carriers to file tariffs providing, with certain exceptions specified herein, for horizontal rate increases in official classification territory. It is expected that the constructive work suggested in the original report for the purpose of conserving and augmenting the net revenues of the carriers generally will be carried forward without interruption.

Carriers will be required to keep an account of the additions to their revenues from increases in rates subsequent to July 29, 1914, and from new charges, and to report separately thereon to the Commission at the end of 12 and 24 months, respectively.

For various reasons we shall except from the proposed increase the following rates:

1. Rail-lake-and-rail, lake-and-rail, and rail-and-lake rates. It is shown on the record that since the rail carriers acquired ownership and control of the Lake lines successive increases have been made in the rates via Lake tending to lessen the differences between them and the all-rail rates.

2. Rates on bituminous coal and coke. Not long since these rates were investigated and maximum rates were prescribed by the Commission. The key rate upon bituminous coal—the rate from the Pittsburgh district to Youngstown, and the rate on Lake cargo coal to Ashtabula—have been fixed in the light of the various factors which enter into the transportation of such coal. The prevailing rates are remunerative, and the financial condition of the principal bituminous coal carriers is in marked contrast with that of many of the other carriers in official classification territory.

Twice in the not distant past the rates on bituminous coal have been increased 5c. a ton, and would seem now to be as high as may fairly be allowed. It must be remembered also that the carriers are not seeking general increases in rates on anthracite coal, and both kinds of coal are used in competitive markets. As to coke, the rates controlling the greater volume of traffic now moving in official classification territory have recently been set by the Commission upon a basis which was specifically designed to guard against shrinking the carrier's revenue therefrom, and which really resulted in substantial additions to their earnings on that traffic.

3. Rates on anthracite coal and iron ore, largely because they are before us for review in other proceedings.

4. Rates held by unexpired orders of the Commission.

In our original report we declined, for reasons there stated, to allow increased rates in central freight association territory on cement, starch, brick, tile, clay, and plaster. On further consideration, in the light of the existing situation, these rates may be increased throughout official classification territory under the limitations herein set forth.

Joint rates between official classification territory on the one hand, and southeastern territory, the Southwest and points on or east of the Missouri River on the other, may be increased not to exceed 5 per cent. of the division of the rate accruing to the carriers in official classification territory. If these increases involve a change in the relationship under the long-and-short-haul rule between intermediate points and more distant points outside of official classification territory relief from the fourth section of the act must first be secured on regular application.

HARRISBURG, PENN.

The coal operators of the state are much interested as to the outcome of the new river and harbors appropriation bill which carries the appropriation of $1,500,000 for the Delaware channel and a provision for the survey of the Schuylkill River with a view to dredging it to a depth of 35 ft., provided there is coöperation by the city of Philadelphia and the state of Pennsylvania. The Schuylkill carries a good share of the Philadelphia port's commerce, but it has been passed over heretofore by the general Government in its river improvements on the ground that Philadelphia and the state should take care of it. The latter have spent money on it and will be encouraged to spend more if the general Government will give its aid as it should to improve navigation of that river.

There is grave danger that the entire bill will inspire the same opposition that the last river and harbors bill did. The total of $34,006,000 is about as much as was cut out of the last bill to overcome the opposition in the Senate. It may be that the worst features of last session's bill do not appear in this, but a rivers and harbors bill in a short session is not difficult to kill if there is any strong opposition to it.

Many Accidents Are Preventable

Verdicts rendered during the recent past in mine cases investigated are notable in that they point to ignorance or negligence on the part of mine employees. In one case it was found that a miner had tamped an overcharge of powder with an iron drill and in another that a miner shortened a squib in order to hasten the explosion. The explosion came before he could get out of the way.

The public often reads startling statements in the newspapers by state and federal officials about the astounding number of preventable casualties in the coal mines. They agree that at least one-half of all the accidents are preventable. The first thought is that the operators are negligent in not having provided proper safeguards, and new laws are constantly suggested to overcome delinquencies.

The operators are not blameless, but the miners themselves are responsible for a large percentage of the preventable casualties. They are constantly in the midst of danger and become accustomed to it. Most of the accidents are caused by falls, yet some employees persist in working in places where roofs are threatening. They strike matches in gaseous places, shorten squibs, do not give sufficient warning to those in close proximity when a blast is about to be fired, and commit other indiscretions. One great trouble is that employees are too anxious to get through with their work, and take chances that sometimes result disastrously, especially when getting on cages.

It is almost impossible to bring about greater caution through legislation, but a remedy that is always available is seldom tried—the prosecution of employees who are wilfully and grossly negligent in endangering the lives of fellow workmen.

A Far-Reaching Decision

In a decision rendered Dec. 21, in reference to transportation rates on anthracite from the Schuylkill, Lehigh and Wyoming regions to Philadelphia, the Public Service Commission of Pennsylvania ruled against the railroads, and announced that it shortly will issue an order compelling the coal carrying lines in the state to cut their rates 40c. a ton on all anthracite delivered to Philadelphia. The decision was written by ex-Governor Pennypacker for his fellow members of the board. The reduction order affects all sizes of coal down to pea, and stipulates that coal under that size shall be carried for the same rate as pea. The ruling carries with it a lowering of rates of between 25 and 30 per cent.

The decision places Philadelphia on an equality with other great American cities and enables dealers there to get their coal at prices on a par with that charged for its delivery there for transportation to other points.

The railroads affected by the ruling are the Philadelphia & Reading, the Pennsylvania, the Central Railroad of New Jersey, the Lehigh Valley and the Delaware, Lackawanna & Western. From the railroads' standpoint the commission's ruling, if put into effect means a nullification, in this state, of the increased revenues made possible by the Interstate Commerce Commission's grant of a 5 per cent. increase in freight rates. The roads were barred from raising the rates on coal, coke and ore, and a reduction in anthracite rates practically means a wiping out of the additional revenue on merchandise tonnage allowed by the Commerce Board.

Furthermore the commission recites the rates of delivery on barges makes them equal in amount to the rates heretofore designated for local delivery. In its findings the commission submitted a statement showing the cost to the railroads of carrying anthracite per ton. It adds also a table showing the new rates on the various sizes of coal, which it will make mandatory on the railroads.

A considerable proportion of anthracite coal intended for local delivery in Philadelphia is carried by the various companies to points upon the Delaware and Schuylkill Rivers, and there unloaded upon barges, which transport it to the wharves and other places of final delivery along these rivers. For this service the barges make a charge of 25c. per ton or some other definite sum.

The respondents have heretofore so arranged their rates that they, together with the barge charges, shall be substantially equal to the charges for local delivery by rail. It is the opinion of the commission that the rates of delivery upon barges shall be so reduced as to make them, with the added expense of the barges, with respect to each class of coal, equal in amount to the rates heretofore designated for delivery by track service.

PENNSYLVANIA

Anthracite

Larksville—The new $75,000 high school building, which is here in course of construction, was badly damaged recently, by a mine-cave in the Boston Colliery of the Delaware & Hudson Co., whose mines are beneath the site of the building. When the force reported for work one morning, it was discovered that the building was about 7 in. out of plumb. Investigation showed the surface to be settling, and since then the structure has sunk a depth of 18 inches.

Shamokin—When workmen at the Hickory Ridge colliery of the Susquehanna Coal Co. discovered on Dec. 15 that the increase of fare would not be rescinded they refused to go to work. The colliery is now tied up. The rate from Shamokin to the colliery is double the old fare. It is feared that unless the company grants the miners less than a first-class passenger rate more collieries will be made idle.

Hazleton—Admitted to the State Hospital three months age with a leg so hopelessly crushed by a fall of coal in the Drifton mines that amputation seemed the only expedient, Peter Marley, a miner, recently walked out of the institution with a new leg bone constructed out of splices taken from healthy bones and grafted to the splintered member This is the first instance of bone grafting in the Hazleton coal fields, where many miners lose limbs by falls in the mines

Coaldale—It is reported that "all fire bosses, foremen and other lesser officials of the Lehigh Coal & Navigation Co. must from now on refrain from participation in politics, or give up their jobs."

Mauch Chunk—Since the Lehigh Coal & Navigation Co.'s Lehigh canal was opened in 1851 nearly 35,000,000 tons of anthracite coal have been transported over that waterway through the locks here. The canal has been in operation every year since 1851, except in 1902, when it was out of commission on account of the excessive floods during February and March, when portions of the banks were washed away.

Wilkes-Barre—In a special report, the War Department which investigated flood conditions of the Susquehanna River in Wyoming Valley, places much of the blame for existing conditions on the great amount of culm in the bed of the stream. For years coal companies have dumped their refuse into the river until the bed is well filled. The investigators find that the construction of levees, elimination of the Nanticoke dam, removal of culm and other refuse from the channel, changing the course of a few creeks and the construction of basins, etc., are necessary to eliminate flood conditions in this end of the anthracite coal field.

Bituminous

Star Junction—Announcement has been made by the Washington Coal & Coke Co. that it would fire 100 ovens at once and 100 more by the first of the year at its Washington Nos. 1 and 2 plants. The further statement was made that the company expects to go on full time after the first of the year.

Jerome—In spite of the prevailing depression in the coal business in this vicinity, some of the operators are supremely confident that the worst is over and that from the first of the year on conditions will improve rapidly and steadily They point to the fact that many of the mines in the southern part of Somerset County have already been reopened and are taking in a good run of orders and that this condition appears to be spreading rapidly to other workings Some of the mines have been long idle and are now working on full or nearly full time, with a good supply of orders

Barnesboro—Three men were fatally burned in an explosion of powder while at work in the powder house of a privately owned coal mine here on Dec. 17. In some manner the powder in five different kegs became ignited and each apparently exploded at the same moment. The powder house, a small building, was blown to atoms.

Boswell—The big tipple of the Merchants Coal Co., which went out of commission recently, when something went wrong with the hoisting machinery has been repaired. It is expected that operations will be resumed in a short time. The mine had been busy up to the time of the accident, and there is said to be plenty of business in prospect to keep the mines busy for some time to come.

Uniontown—At a receivers' sale on Dec. 15, the American Steel Co. of Pittsburgh purchased the Cyrilla and Francis No. 1 coke plants of the Francis Rocks Coal & Coke Co. for $1 and the assumption of a $100,000 obligation, consisting of mortgages, etc. The Cyrilla plant consists of 100 coke ovens and 110 acres of coal land, while the Francis No. 1 plant consists of 200 ovens and 100 acres of coal lands. The purchase for the steel company was made by Eugene Riley, president of the firm. Before leaving Uniontown, President Riley said that fires in both plants would be started by the first of the year, and that each would run at full capacity. The plants have been in the hands of a receiver for some time and idle for a year.

Connellsville—Coke operators are elated over the decision in the Eastern railroad freight rate case. The fact that no advance in coke rates has been allowed naturally pleases the coke men, who would have reopened their fight had the rates gone up. Independent coke operators believe the railroads will now place their steel orders.

WEST VIRGINIA

Clothier—About 150 miners in the employ of the Coal Valley Mining Co., at this place, returned to work recently, after a week of idleness. The men went on strike after the company had discharged a miner for the alleged loading of dirty coal. The company refused to reinstate this man but the miners agreed to return to work, and in the meantime the discharge case will be taken under consideration by the board of arbitration.

Rosemont—The 200 miners employed by the Weaver Coal Co. have returned to work after having been on strike for about two weeks. They left the mine following a disagreement over the employment of a check weighman, and the alleged wrong done them through the operation of the docking system. The company has agreed to the employment of a check weighman at a later date and the docking system will be taken under consideration at a conference to be held in the future.

Charleston—The Department of Mines of West Virginia, for November recorded 25 deaths from mine accidents as compared with 34 for the previous month. Eleven deaths were caused by falls of roof and slate, 4 by mine cars, 3 by locomotives, 3 by electricity, one by a mining machine, one by an explosion, while one death was due to scalding outside of the mine and one to blood poisoning following a slight injury.

Coalwood—West Virginia coal interests are much pleased with the report that George L. Carter has arranged to transfer his general offices from Johnson City, Tenn., to Coalwood, where the Carter Coal Co. has extensive operations. This firm has made the announcement that it will invest $750,000 for opening new mines and making Coalwood the center of activity in that region.

ALABAMA

Montgomery—Because of the fact that the production of coal in Alabama is not sufficient to warrant the appointment of an additional state mine inspector, the Governor has announced that he will not fill the vacancy on the board caused by the expiration of the term of office of Judson F. Webb, of Quinton.

Birmingham—W. H. Skeggs, of Chicago, recently sold a large tract of coal land near Berry. This land is a part of 30,000 acres in the Corona field, all of which is underlaid with the Corona bed of coal varying in thickness from 5 to 7 ft., and occurring at a depth of from 400 to 700 ft. About a year and a half ago part of this tract was sold to the Bessemer Coal, Iron & Land Co. and a half interest in the balance to Henry L. Badham, president of the above named firm. This is one of the most valuable tracts of coal land in Alabama.

Bessemer, Ala.—Coal mining in the Blue Creek district shows somewhat of an increase. The mines of the Tennessee Coal, Iron & Railroad Co., at Sumter and Johns, are now operating five days per week, with a prospect of running six days after the beginning of the year. The indications are that there will be good business shortly at all mining camps.

TENNESSEE

Jellico—The coal mines in this section have been running only a few days per week in the past. Operators now hope to start the new year with six days per week. Already the Bon Jellico Coal Co. is working six days, while the Gatliff Coal Co. and the Mahan-Jellico Coal Co. are endeavoring to operate full time. The Louisville & Nashville R.R. Co. is experiencing some trouble on the Pine Mountain branch, in keeping train crews from working over time. Another crew will probably be added upon this branch to take care of the passenger and coal traffic.

KENTUCKY

Harlan—Guthrie Bros. & Norval have taken a lease from Denver Cornett of the Harlan Home mine and will improve the equipment and increase the scale of operations. The lessees are Alabama operators who have met with success in that section.

Lexington—Fifteen men have received certificates as mine foremen out of the 16 who recently took the examination conducted here under Dean C. K. Norwood, of the State College of Mines and Metallurgy, Thomas Robinson, a graduate of this year's class, headed the list and since receiving his certificate he has been made mine foreman by the Northeastern Coal Co. First, second and third class certificates were given, the first class fitting the holder to serve as foreman in any mine and second class certificates to serve in that capacity only in non-gaseous mines.

Sturgis—A 10-day shutdown is all that will be necessary at the mines of the West Kentucky Coal Co. near here as a result of the burning of the tipple several days ago. Mine run coal will be taken out for the time being and reconstruction of the tipple will be pushed. Defective electric wiring is blamed for the fire which caused a loss of $10,000 partly covered by insurance.

Sebree—There were no bidders when the property of the Sebree Coal & Mining Co. was cried at the courthouse door in Dixon several days ago, the first sale of the property having been disallowed.

Hemphill—The K. S. Potter tract of coal lands on the Lexington & Eastern branch of the Louisville & Nashville R.R., has been leased by White L. Moss and others, of Pineville, Ky. The company, after the first of the year, will begin to develop on a large scale and proposes an initial capacity of 1200 tons daily. Mr. Moss is manager.

OHIO

Bellaire—Twenty-five mules formerly used at the Blaine mine of the Lorain Coal & Dock Co. were recently removed from the mine and shipped to a point in the interior of the state. This completes the partial abandonment of three of the Lorain Coal & Dock Co.'s mines. It is not known yet whether any of the machinery from these operations will be removed. It is intimated that the three mines of the company are to be abandoned and the machinery moved to West Virginia, where this firm is believed to have recently made extensive purchases of coal lands.

Columbus—Receiver Charles Cohenour of the Maple Gallia Coal Co. will sell all of the assets of the company at public auction, Jan. 9, at the courthouse, in Columbus. The main part of the assets consists of mines at Nelsonville and Clarion.

INDIANA

Evansville—The mines at Spottsville, Ky., on Green River, owned largely by capitalists of Evansville, will be abandoned. They were flooded recently and all efforts to clear them of water have been in vain. Two hundred miners have come here to seek other mine work.

Jeffersonville—The advance guard of large consignments of coal is arriving from Pittsburgh, the first since May 1, on account of low water in the Ohio river. It is estimated that 10,000,000 bushels are loaded on barges at Pittsburgh. Most of this will go to the South.

ILLINOIS

Chicago—Leases under which 11 coal mines in Illinois and Indiana, owned by the Chicago & Eastern Illinois R.R. were operated by coal companies, have been canceled, and the mines will hereafter be operated for the railroad company by receivers Bering, Peabody and Wooley, who are executive heads of the lessee companies. The output of these mines will, however, continue to be marketed through the same coal organization.

OKLAHOMA

Wilburton—Property of the Great Western Coal & Coke Co. was recently seized by Sheriff Lawrence upon writs of execution issued in the District Court to satisfy judgments amounting to $40,544.05 growing out of the deaths of six men who lost their lives in an explosion in one of the company's mines in April, 1909. The original amount of damages awarded was $34,500, which with interest and costs to the present time amounts to the figure above named.

FOREIGN NEWS

Fernie, B. C.—The demand for coke from the Crows Nest Pass Coal Co. is increasing and 100 ovens were recently started at the Michel colliery. It is expected that additional ovens will be fired there soon. The mines have also been working much more regularly than heretofore, and while they are only producing slightly over a third of their capacity, the prospect is more favorable than it was a short time ago.

PERSONALS

Mark Storen, the new United States marshal for Indiana, has named as his first deputy, Frank Barnhart, a miner of Farmersburg.

William Farrell has been made general manager of the Holliday Coal Co., operating in the Nuttalburg coal measure. For the past 10 years, Mr. Farrell has been with the New River Co. as a mine superintendent.

Paul C. Mansfield, formerly of Clarksburg, W. Va., has taken a position as traveling representative of the Sidenfeld-Hammond Coal Co., of Columbus. He will cover northern Ohio, southern Michigan and a portion of Indiana.

Harry F. Butler, for several years sales agent of the Pittsburgh Coal Co., at Buffalo, N. Y., has resigned to go into other business. He has been succeeded by E. Seymour Whitley, for some time salesman connected with the Buffalo office.

Delwyn Wolfe has been promoted by the Lehigh Valley Coal Co. from division engineer of the Delano division to district inside superintendent, with headquarters at Hazleton, to succeed Thomas R. Jones, who has taken charge of the Mahanoy division.

O. B. Tanner has been placed in charge of the new office of the Goulds Manufacturing Co., in the Third National Bank Building in Atlanta, Ga., as district manager. This company is one of the largest manufacturers of triplex, centrifugal, hand and spray pumps.

John Rowlands of the Lehigh Valley Coal Co., employed as general outside superintendent, has tendered his resignation. This will go into effect the first of the year. For many years he has been in the employ of the concern and previous to that was an employee of the Coxe Brothers Company.

Martin Bolt, for many years chief clerk of the State Mining Board of Illinois, has resigned. John E. Jones, the newly appointed state mine inspector for the third district, will fill this position temporarily until James F. Morris, recently appointed to this place by Governor Dunne, can take charge.

Thomas L. Lynch, president of the H. C. Frick Coke Co., was suddenly taken ill with peritonitis on Dec. 16. An operation was performed early the next morning. At the present writing he is at his home in Greensburg, Penn., and is reported to be doing as well as may be expected under the circumstances.

Captain Charles J. Menges, river manager at Cincinnati for the Monongahela River Coal & Coke Co., was the guest of honor at a dinner recently given at the Business Men's Club by members of the Cincinnati Coal Exchange, the occasion being Captain Menges' early departure for New Orleans, where he will take charge of the company's rapidly developing export trade.

Arthur E. Jackman has been appointed manager of the machinery department of the Walter A. Zelnicker Supply Co., of St. Louis, in the place of J. J. Hilpirt, resigned. Mr. Jackman has had a wide experience and possesses much practical knowledge of steam and electrical machinery and equipment, which will be of considerable benefit to his employer's customers in his present position.

M. D. Royer has resigned his position with the Lehigh Valley Coal Sales Co. and accepted that of traffic manager of the Manila R.R. Co. at Manila, Philippine Islands. He will leave for his new post immediately after Christmas, sailing

from San Francisco, Jan. 9, for Manila by way of Hong Kong. Before accepting the position with the Lehigh Valley Coal Sales Co., Mr. Royer was for several years assistant general manager of the Galloway Coal Co., of Birmingham, Ala.

C. W. Brooke, an engineer of long experience in sales and advertising campaigns in the Pittsburgh and Buffalo districts, recently acquired an interest in the Chamberlain Co., of Detroit, Mich. In keeping with the policy of expansion on the part of this firm, Mr. Brooke goes to it as secretary and treasurer. The Chamberlain Co. has for some time past retained a number of the largest and most attractive accounts in the power plant field of technical publicity.

James E. Roderick, chief of the Department of Mines, on Dec. 15 named Mine Inspectors M. J. Brennan, Pottsville; P. C. Fenton, Mahanoy City; and P. J. Friel, of Shamokin, as a commission to investigate the Lansford No. 4 mine disaster of last summer when seven men were killed by gas. Mine Inspector Davies, of Lansford, and President Thomas Kennedy, of District No. 7, United Mine Workers of Hazleton, were authorized to accompany the commission when it enters the mines and holds its sessions.

OBITUARY

Harry K. Preston, mining engineer, and formerly owner of extensive coal operations, committed suicide on Dec. 17, in his home, 532 West School Lane, Germantown, Penn.

John C. Haddock, president of the Plymouth Coal Co., of Wilkes-Barre, Penn., died in New York, Dec. 20, of acute stomach trouble. Mr. Haddock for years had been involved in intricate litigation over freight rates. He testified on one occasion before the Interstate Commerce Commission that he had lost $800,000 in 8 years through discrimination against him by a coal road. He was born in Ireland in 1850.

Shirley Leisure, general electrician of the Consolidation Coal Co., at the Columbia mine, was accidently electrocuted Dec. 15. Mr. Leisure, in order to make certain necessary repairs, pulled the switch controlling the high tension wires, but failed to notice that because of the cold weather prevailing, the connections were not broken. Grasping the wires he was immediately killed. Mr. Leisure was 22 years of age, and had been employed by the one company for 11 years, beginning as a water boy. He was unmarried, but is survived by his father and two sisters.

Senator Robert Jaffray, of Toronto, a prominent Canadian financier, died on Dec. 16, in his 83d year, the immediate cause of death being the bursting of a blood vessel. He was born in Scotland in 1832, and came to Canada in early life, settling in Toronto. Since 1883 his attention was given to financial affairs and industrial development. He was president of the Imperial Bank and the Globe Printing Co. and a member of the directorates of the Nova Scotia Steel & Coal Co., the Canadian General Electric Co., the Canadian Allis-Chalmers, Ltd., and several other corporations. Mr. Jaffray took a leading part in the organization of the Crows Nest Pass Coal Co., of Fernie, B. C., one of the pioneers in the development of the coal deposits of the interior of western Canada, which was incorporated in 1897. He held the vice-presidency of the company for many years, retiring in 1909. Mr. Jaffray took a keen interest in politics as a leading member of the Liberal party and was appointed a member of the Canadian Senate in 1906. He is survived by two sons and two daughters.

CONSTRUCTION NEWS

Greenville, Ky.—The Gibraltar Coal Co. is constructing an addition to its power house and installing new machinery.

Carrollton, Ohio—The Inter-State Mining Co., which was organized several weeks ago at Akron, with a capital of $300,000, will develop a large tract of coal land near Carrollton. It is planned to open at once an electrically equipped mine with a capacity of 1500 tons daily. John P. Jones, of Canton, is president; August Blissman, treasurer, and C. W. Wickline, secretary.

Hazard, Ky.—The Hazard Town Coal Co. has arranged with the Louisville & Nashville R.R. Co. to install a tipple alongside the yards at the lower end of Hazard. Installation work will be begun by the coal company in the near future, the plan being to operate the No. 4 seam and carry the coal across the river to the tipple in large bucket conveyors. John B. Eversole is part owner of the tract on which the mine has been opened and is actively pushing the work.

Huntington, W. Va.—It is reported that during the coming year the Chesapeake & Ohio R.R. will follow the example of the Norfolk & Western in the field between Bluefield and Vivian, and will electrify its Guyandotte Valley branch, installing either a trolley or a third-rail system. The first of the dozen electric locomotives which will be used by the N. & W. on the section between Bluefield and Vivian has been received at Bluefield, and its size and power made a considerable impression. It is said that the electrification of the Guyandotte Valley branch of the C. & O. would be an easy matter, and that it would immensely simplify the moving of large tonnages of coal in that section.

Pine Knot, Ky.—Promoters of the Jellico Coal & R.R. Co., which owns 15,000 acres of rich mineral land in this (McCreary) county, have been engaged for a week or so in a survey of the property which, it is announced, they intend to develop at once. In this connection it is stated that the company will build a 16-mile railroad from the mouth of Capachine Creek to intersect the Cincinnati, New Orleans & Texas Pacific R.R., either at this point or a short distance south of here. The company has been taking options through this section for the past four years and, it is said, now owns most of the property through which the railroad will pass. Much of the coal is in 7-ft. beds and is all easily accessible by drift mining. Several large bodies of virgin timber are included in the area.

NEW INCORPORATIONS

Tuscaloosa, Ala.—The Riverside Coal Co. has been organized with a capital stock of $162,000.

Charleston, W. Va.—The Whyel Coal Co., of Uniontown, Penn., has been incorporated in West Virginia with a capital stock of $250,000, by George Whyel, Harry Whyel, H. L. Robinson, and John L. Robinson, of Uniontown, and F. E. Waddell, of Scottdale, Penn. It will engage in mining.

Lynchburg, Va.—The Alpha Pocahontas Coal Co. has been organized to develop Pocahontas coal field property. The capital stock is limited to $125,000, and the officers are F. M. Lee, president; S. P. Halsey, vice-president; and G. H. Wilkins, secretary-treasurer. These officers together with R. C. Scott, L. Lazarus, R. S. Terry, and F. T. Lee, compose the board.

INDUSTRIAL NEWS

Boston, Mass.—The Consolidation Coal Co., Inc., has turned over its floating equipment, steamers, tugs and barges, to a new corporation known as the Consolidation Coastwise Co. recently organized under the laws of Massachusetts.

Martins Ferry, Ohio—The largest verdict returned locally in a personal injury suit for some time was awarded in Common Pleas Court recently against the Johnson Coal Co. of Bellaire. The suit was that of Henry Unterzuber against the Johnson company and the verdict amounted to $4500. Unterzuber sued for $15,000.

Washington, D. C.—Congressional investigation of charges that the Southern Ry. discriminates against independent coal operators in the Virginia, Tennessee, and Kentucky coalfields in the interest of a coal trust was adjourned recently until Jan. 6. Upon that date, Mark Potter, president of the Clinchfield Ry., will cross-examine Frank C. Wright, of Bristol, Tenn., who has been giving testimony to support these allegations.

Bluefield, W. Va.—The comptroller of the Norfolk & Western R.R. recently made public the statement of coal shipments for the month of November compiled from the records of his office. They show from the Pocahontas field 837,577 tons, Tug River, 263,975, Thacker, 235,080, Kenova. 90,772, Clinch Valley, 237,831. Other Norfolk & Western territory 3849 tons, or a total from Norfolk & Western fields of 1,659,084 tons. There was also derived from the Williamson & Pond Creek Division 62,505 tons and from other railroads 131,269 tons, making a grand total of 1,852,858 tons. The total shipments for the corresponding month of 1912 were 1,896,817 tons, and in 1913, 2,184,338 tons. Shipments for 1914 compared with 1913 in the month of November have consequently fallen off 332,480 tons or about one seventh.

Coal Trade Reviews

General Review

Anthracite consumers becoming urgent about prompt deliveries. Bituminous quiet with sellers concerned mostly about new contracts. Effects of the customary year-end curtailment already being felt, but colder weather stimulates the domestic trade.

The continued low temperatures in all parts of the country have created an active situation in the retail end of the anthracite trade. Consumers in all directions are becoming urgent about prompt delivery, but on the other hand there is a notable absence of the insistent demand on the mines that is usually characteristic of the first winter's cold snaps. New contracts on the steam sizes are now being negotiated with prices ruling on about the same basis as last year. The feature of the anthracite trade this week was the heavy reduction in freight rates into Philadelphia, ordered by the Pennsylvania State Commerce Commission.

While bituminous is showing some well defined indications of improvement, there is still a complete absence of any important activities, and the Eastern agencies are now chiefly concerned with the new contracts expiring Jan. 1. In view of the low prices that have ruled since early spring, there is a marked tendency on the part of consumers to hold off for the time being at least; as a matter of fact, spot buyers have been practically in control of the situation over the past six months. The outlook on prices is indeterminate so far, and the opening negotiations will be watched with interest.

In the meantime the accumulations continue large, though an occasional shortage has recently been reported, due to the congestion on the railroads and the heavy storms at sea, which has given a temporary stimulus to the trade. But the mines are working on such short time that the usual slowing down over the holidays will scarcely be noticed. The usual year-end curtailment at industrial plants is being noted, but with the favorable decision in the famous 5 per cent. rate case and other constructive developments, there is a distinctly optimistic feeling noted.

Manufacturing demand in the Pittsburgh district has suffered severely as a result of the holiday cessations, but this has been partially compensated for by an increased domestic consumption, due to the colder weather. There is a notably better tone in the Ohio market due in part to the favorable interpretation placed on the Interstate Commerce Commission's ruling on the freight rate decision and also to the more seasonable weather conditions. Surplus stocks are being cleaned up rapidly, while orders held up at the mines are now being released, and occasional urgent requests for immediate shipment are coming in. There is much interest in contracts for the new year, some of the large ones expiring shortly.

The Middle Western situation has also improved considerably and running schedules at the mines have been tuned up to nearly full capacity. The screenings situation continues the feature of the market, though domestic buying stiffened up rapidly under the influence of the colder weather, and this in spite of the fact that stocks on hand were unusually large. There are well defined indications of an improvement in manufacturing and with the added stimulus of the rate increase to the railroads, the outlook is more hopeful than for some time.

ATLANTIC SEABOARD

BOSTON

Slightly better tone to bituminous but accumulations continue large. Canvassing already in progress for 1915 business but buyers are not encouraging. Georges Creek gets farther behind on shipments. Pennsylvania grades still face a restricted market.

Bituminous—Seasonable weather has caused a slight improvement in the market. Contract demand, in view of the slow movement of cargoes coastwise, is notably better, and in scattered instances there is inquiry for spot shipment. The general state of the trade is not enough better, however, to make shippers relax any in their efforts to place the tonnages that come to all the terminals in undiminished volume. Accumulations are still heavy at Hampton Roads, and while spot cargoes would command somewhat higher prices the range is very little in advance of a fortnight ago.

Pocahontas and New River interests are beginning to get actively interested in 1915 business and it is possible that January will see some interesting developments. New England buyers are likely to be conservative next season in view of the low prices that have ruled since last May and June when the contract-placing season was practically over. As a matter of record the buyers who have purchased from time to time as required have done better this season than have those who made contracts; this applies to the ordinary plant where the consumption is not so large that a continuous supply is an important consideration. Unless something unforeseen occurs, however, the early part of 1915 will probably be rather a slow season for placing yearly contracts.

At Boston, Providence, and other distributing points, on-car prices have declined somewhat on account of free arrivals the past few days, but figures now are about the same as a week ago. For a short period spot coal was scarce and a slight premium was paid.

Georges Creek shipments are getting farther and farther behind. A succession of storms has seriously interfered with tows along the coast.

The Pennsylvania grades have shown some improvement in the demand all-rail, but the Tidewater market is still much restricted. Practically all the shippers have coal standing at the piers and concessions have to be made to move it.

Water Freights are somewhat firmer on account of the weather; 70@80c. is now about the rate on vessels and barges, 3500 tons upward, Hampton Roads to Boston.

Anthracite—The retail trade is about normal and occasional requisitions find their way to the wholesalers. Stove size is in plentiful supply with all the shippers, egg and chestnut continuing to be offered by independent operators at prices considerably off the circular.

Current quotations on bituminous are about as follows:

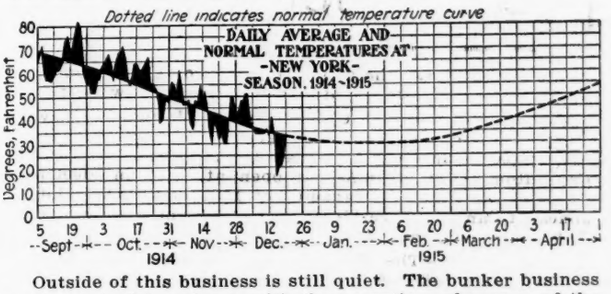
	Clearfields	Cambrias Somersets	Georges Creek	Pocahontas New River
Mines*.....	$0.85@1.45	$1.15@1.50	$1.67@1.77	
Philadelphia*.....	2.10@2.70	2.35@2.70	2.92@3.02	
New York*.....	2.40@3.10	2.65@3.05	3.22@3.32	
Baltimore*.....	.....	.....	2.85@2.95	
Hampton Roads*.	.....	.....	.....	$2.55@2.75
Boston†.....	.....	.....	.....	3.50@3.73
Providence†.....	.....	.....	.....	3.35@3.63

* F.o.b. †On cars.

NEW YORK

Congestion on railroads causes a temporary shortage of bituminous but the market continues generally heavy. Colder weather has stimulated the anthracite situation.

Bituminous—Some of the railroads have been badly congested for the past week and deliveries from the mines to Tidewater are coming in slowly. This condition caught a few companies with a short supply. The recent heavy weather interfered greatly with the movement of bottoms and there was some little demand for spot float coal.



Outside of this business is still quiet. The bunker business continues in fair volume, with the exception, of course, of the regular lines which are tied up. There is considerable competition for the few contracts that are in the market for closing on January first. This is the usual period of contracting

for bunkering business, the commercial contracts being largely closed on April first.

The market is not quotably changed from the past several weeks which we continue as follows: West Virginia steam, $2.35@2.55; fair grades, Pennsylvania, $2.55@2.65; good grades of Pennsylvania, $2.70@2.80; best Miller Pennsylvania, $3.10@3.15; Georges Creek, $3.15@3.25.

Anthracite—The recent low temperatures have greatly stimulated buying. This is more noticeable particularly in the local Tidewater market. Retail dealers report a good volume of business and with continued cold weather the demand should remain good. The outlying districts, where stocks were heavy, have not come in with the demand experienced at tidewater. The buying at this season of the year, from this branch of the trade, is confined more to car lots, where earlier in the season heavier orders were placed. Chestnut appears to be the strongest size while stove is quite plentiful and egg continues to sell slightly off circular.

The market is quotable on the following basis:

	Upper Ports		Lower Ports	
	Circular	Individual	Circular	Individual
Broken	$5.10	$4.60@5.10	$5.05	$4.55@5.05
Egg	5.35	5.00@5.35	5.30	4.80@5.30
Stove	5.35	5.25@5.35	5.30	5.20@5.30
Chestnut	5.60	5.45@5.60	5.55	5.40@5.55
Pea	3.55	3.45@3.55	3.50	3.35@3.50
Buckwheat	2.80	2.50@2.80	2.50@2.75	2.15@2.75
Rice	2.30	2.20@2.30	2.00@2.25	1.35@2.25
Barley	1.80	1.60@1.80	1.75	1.25@1.75

PHILADELPHIA

Cold weather stimulates demand in retail trade, but wholesale market is still quiet and without tone. Suspension in production owing to holidays. Situation in bituminous shows little improvement in demand, but prices are unchanged.

Anthracite—While the retail trade report that there seems to be a better demand for coal, owing to the cold weather, supplies are so ample that the expected improvement in the wholesale market has not as yet materialized. Pea coal is in especially better call, and the large companies have commenced to draw on their reserves. Broken and egg continue to lag, but stove and chestnut are moving well, and with the usual holiday suspensions at the mines, the output is likely to be well taken care of.

The feature of the week was the announcement of a heavy reduction in the rates on anthracite coal to Philadelphia, and vicinity. Many contracts are made at a delivered price, and as the announcement came at a time when many of these contracts were about to be closed up, there is considerable speculation as to the results in event of the railroads submitting to the cut; this is not likely, however, as it will probably be fought to the bitter end, and it may be a year or more before the proposition is placed on a definite basis. Dealers here are of the opinion that the reduction to the consumer should not be the full amount of the cut, and the question of the saving to the public may still be an open one. It must be remembered that a short time ago there was a threatened increase in retail prices which did not materialize and the commission's ruling, even if effective, may simply result in the dealers standing pat on their present prices.

Contracting for the steam sizes for next year is now in order, and the various companies report that renewals are coming in on the same basis as last year, with few protests as to prices. The apathetic condition of the steam coal trade during the year 1914 led many to believe that there might be some modification in prices, but as a rule, they are on the same basis as follows: Broken, $3.25; pea, $2.25; buckwheat, $1.25 and rice, 85c.

Bituminous—There seems to be a slightly better demand for the better grades of soft coal. Contrary to conditions prevailing at the Tidewater ports a month or six weeks ago, it is understood that the fleets of barges sailing from this city are carrying quite large quantities of the various grades of coal for New England consignment. This reflects a better call for coal, doubtless due to improved weather conditions, and to the fact that the manufacturing interests report that conditions are slightly improved, so that what little coal they have on hand has been depleted, and further supplies are required.

BALTIMORE

Bituminous demand poor and shows little indication of improvement until after the holidays at least. Rate decision may bring some relief.

No improvement is to be noted in the soft-coal trade. The usual slowing up in operations, due to Christmas and New Years, will scarcely be noticed. Where coal is being produced on a two-, three- or four-day basis, it is mostly to meet contract demand.

West Virginia gas coals are still selling at from 75c. to 90c. Steam coals bring from 85 to 90c. In Pennsylvania some low-grade fuels are to be had in limited lots below the dollar mark at times, while medium-grade fuels sell for $1.05 to $1.15 and best grades around $1.30.

At the piers here considerable coal is again being loaded on foreign account and December is expected to make a fair showing on exports. If the month's total reaches 80,000 it will bring the shipments on foreign account for this year to nearly 100,000 more than the record for 1913

In many quarters it is hoped that the railroad rate decision will prove an aid to the coal trade by stimulating business generally. The Maryland Steel Co. officials, for instance, are said to expect a number of rail orders to be released shortly as a result of the settlement of this long drawn out affair.

BUFFALO

Anthracite stimulated with the coming of severe weather, but bituminous is still slow. Railroad men predict a stir after the middle of January. Loading winter cargoes.

Bituminous—The cold weather has done something for this trade, but as a rule shippers say that it will take a genuine revival of business to make much impression. The business situation improves, but so slowly that it may be months before it will amount to anything. Shippers look for something better now that the railroads have their long-demanded advance in freight rates. It is already reported that Canada is more active, not only on war orders, but in some other directions. This is naturally the duliest part of the business year and when it is past there should be some improvement and it is likely to be considerable. For the present there are reports everywhere that many factories are going to be idle during the last half of the month, so that if coal sales keep up even fair it will mean that there will be a good demand when the business starts up after the first of the year.

The mines tributary to this market are running not over half-time, as a rule, and there is often difficulty in disposing of even this restricted output. Some consumers have taken more stock than they should and others are refusing to take more than they must have, which reduces sales to their lowest in both cases. There is a better tone to the bituminous market, though it is based largely on a general belief that all business is going to be better soon. Slack is steadily growing stronger and sizes are following to a certain extent. Quotations remain on the basis of $2.80 for best Pittsburgh lump, $2.70 for three-quarter, $2.55 for mine-run and $2.15 for slack, with Allegheny Valley sizes about 25c. lower.

Anthracite—The demand is good, though it is noted that the big shippers have not the amount of orders on their books that they commonly have at this time of the year. As a rule they are fairly swamped with orders with the setting in of good fall weather. Quite an amount of the usual insistence on deliveries has been eliminated by the activity of bituminous shippers who handle independent anthracite. Sales are made at regular circular prices.

The shutting down of the Lakes for the season has not stopped the loading of coal into vessels. There is quite a large surplus of egg here that is not required and this is being put afloat to get it out of the way. One shipper has loaded two cargoes and has half a dozen more chartered.

TORONTO, CAN.

Colder weather has started a better domestic movement and steam demand is increasing slightly.

The setting in of cold weather has brought about a revival of activity in the coal trade, and stocks are moving freely. The market for steam coal is only fair, as many plants are still closed down or curtailing their output, but conditions are slowly improving largely on account of extensive orders for war supplies. Quotations are as follows, with a stiffening tendency as regards slack. Retail anthracite egg, stove and nut, $8; grate, $7.75; pea, $6.75. Bituminous steam, $5.25; screenings, $4.35; domestic lump, $6; cannel, $7.50. Wholesale f.o.b. cars, three-quarter lump, $3.68; screenings, $2.54.

HAMPTON ROADS

Movement from Hampton Roads only fair. Government loadings about 15,000 tons during week. Movement confined mostly to contracts.

Dumpings over the Tidewater piers for the week have been about fair; export cargoes have gone to Canal Zone, Rio de Janeiro, Valparaiso, Port of Spain, Havana and Buenos Aires while coastwise movement has been principally to the New England market. Two government colliers have been taken care of, their cargoes amounting to about 15,000 tons.

There has been little, if any, change in the prevailing circular and the demand has been light, the greater part of the coal moving having been on old contracts. The

amount of coal in the railway yards is still somewhat above normal and there is only a small amount of tonnage in port waiting to be loaded.

On account of high rates for steam tonnage sailing vessels are in more demand than they have been for some time. The schooner "Frontenac" has loaded a coal cargo for Rio which is quite a departure from the ordinary for this class of tonnage.

Indications now are that figures for December will show a decline when compared with previous months as well as with the corresponding month of last year.

OCEAN CHARTERS

Coal charters have been reported by the "Journal of Commerce" as follows:

Vessel	Nationality	From	To	Tons	Rate
Oakley C. Curtis		Norfolk	Portland	2000	
Dorothy Palmer		Hampton Roads	Searsport	2315	
Luigi	Italian	Baltimore	Brindisi	2260	

Note—Steamers are indicated by **bold face** type, all others being schooners.

OCEAN FREIGHTS

Steamer rates stiffen up still further.

The freight market is considerably firmer than a week ago, with but few steamers available for Bermuda, Kingston or Cuba, at less than the rates quoted below, except small boats, carrying 800 to 1500 tons each. The two large sailing vessels that were reported as having been chartered to take coal to Rio only secured $4.50 and $4.37½ clear form of charter, and not as previously reported; $6 is offered for coal steamers to Rio, but this rate can be shaded for Montevideo.

We are in a particularly fortunate position to name favorable rates on coal to Valparaiso, or other West Coast ports, either by single cargo or on contract. Steamers employed in this trade carry about 6000 and 7000 tons each.

To	Rate	To	Rate	To	Rate
Havana	$1.75@2.00	Kingston†	$2.00@2.25	Tampico	$2.50
Cardenas††	2.25@2.50	Curacao	2.00	Rio	6.00@6.60
Cienfuegos	2.25@2.50	Santiago	2.25@2.50	Buenos Ayres**	5.40@6.00
Port of Spain	2.50@2.75	Guantanamo	2.25@2.50	Mediterranean	8.40
St. Lucia	2.50@2.75	Demerara	4.00		
St. Thomas	2.50@2.75	Bermuda	2.25		
Barbados	2.50@2.75	Vera Cruz	2.50		

*About. †Small boats to Kingston $2.25@2.50. **Or La Plata. ††Or Sagua.
W. W. Battie & Co.'s Coal Trade Freight Report.

OHIO VALLEY

PITTSBURGH

Retail demand much improved, but manufacturing demand correspondingly diminished on account of the holidays, operations remaining at slightly under 40% of capacity. Prices continue irregular.

The cold weather of the past ten days, the temperature ranging between zero and 40°, has given a great stimulus to the retail coal demand, which has been by far the best of the season thus far, but an influence in the opposite direction has practically counterbalanced this improvement, as the demand from the iron and steel mills has very considerably decreased, owing to quite general closing of plants over the holidays. In many instances plants will close Thursday, Dec. 24 and not resume until Monday, Jan. 4.

Railroad demand is about the same as formerly and on the whole the mines of the Pittsburgh district have been unable to increase their operations, but are dragging along at an average rate slightly under 40%. Some are doing much better than this while others are operating light two days in the week only and a few are closed entirely. Prices are as irregular as formerly, even slack not having reacted to the full nominal price of 90c., and about 80c. seems to be a fair average quotation. What may be called regular asking prices, subject frequently to concessions of about 10c. a ton, are as follows: Slack, 90c.; nut and slack, $1; nut, $1.10; mine-run, $1.15; ¾-in., $1.25; 1¼-in., $1.35, per net ton at mine, Pittsburgh district.

TOLEDO

Surplus stocks being cleaned up and the situation is distinctly better. Same important contracts coming up.

The cold weather has brought a better demand for both domestic and steam coal. The steam dealers have been picking up track coal for economy's sake and are now in the market for supplies. Some of the large automobile concerns in Detroit are also in the market for coal on contract and it is said that many other concerns which have not yet contracted are now ready to come in. The better situation in the eastern Ohio fields is regarded favorably here, especially among operators having mines in that territory, and it is hoped that strike difficulties will soon be a thing of the past.

CINCINNATI

Continued cold weather has maintained the market. Dealers' stocks apparently large. Steam business remains dull.

The flurry of business due to the cold snap has subsided, despite the continuance of the most severe weather of the winter during the past week. The necessity for shutting off the local gas supply to large industrial consumers indicates the increased consumption of fuel, both coal and gas, and also gives promise of an early betterment in the steam market, as more than a hundred large consumers have had to go back to coal. However, dealers seem to be well supplied with coal, and it will take more cold weather to bring them into the market. The decision of the Interstate Commerce Commission in favor of higher rates for the railroads is expected to be a factor of importance. More liberal buying by the carriers will relieve the situation to a considerable extent, and will be of great assistance in reviving industry in general. These favorable changes are expected to materialize shortly after the first of the year, but at present, with a slow demand from the trade, plenty of coal, both rail and river, the market is in rather poor shape, and this has resulted in some price concessions.

COLUMBUS

The cold wave has stimulated the trade. Domestic demand increased though the steam business is still slow. Retailers are having a rushing business.

More favorable weather has had a marked effect on the coal trade. Domestic business has been stimulated and prices strengthened all along the line On the whole there is an improvement in the tone of the market with future prospects growing brighter.

Retail trade became quite active as soon as the cold spell arrived. Dealers' stocks were generally low and as a result operators and jobbers began to receive orders; in many cases there were requests for immediate shipment and where orders had been held up, instructions were given to permit shipments to come forward Retail prices have been firm at the same levels and there is some likelihood of an advance if the favorable weather conditions continue

The steam business is still dull and manufacturing must improve before any marked change will be noted. Consumers of steam grades are buying on the open market in many instances. A number of contracts will expire after the first of the year and an effort will be made to renew them at the old figures. The tonnage required for railroad consumption is not large.

The circular price list is still quoted but cutting on practically all grades continues; this is especially true of mine-run which is one of the weakest grades The small sizes are still strong as the production of lump is limited.

Production has been increased in most of the Ohio mining districts. The Hocking Valley produced about 70% of the average and Crooksville, Cambridge and Jackson about 60% normal The output from Pomeroy Bend district is about 90% of normal and in some instances full time was worked.

Prices in the Ohio fields are:

	Hocking Valley	Pomeroy	Kanawha
Rescreened lump	$1.55	$1.65	.....
Inch and a quarter	1.50	1.55	$1.40
Three-quarter inch	1.35	1.40	1.35
Nut	1.15	1.25	1.15
Mine-run	1.10	1.15	1.10
Nut, pea and slack	0.65	0.65	0.60
Coarse slack	0.55	0.55	0.50

CLEVELAND

Cold weather and light receipts have braced the market and prices are 5 to 10c. higher. Retail trade beginning to come into the market.

The ruling price on track here is $1.75 for high-grade slack. A few cars were sold at the opening of the week at $1.65 to clean up coal held over Sunday, but slack is none to plentiful and operators and jobbers are holding all that does not move readily.

Coarse coals are showing more strength; generally, three-quarter coals are 5c. higher, and in some instances as much as 10c. The cold weather has increased the demand to a small extent, and the retail trade is beginning to run short of some grades. Another week of cold weather would bring the market up.

Pocahontas on track has been well cleaned up and circular is being asked for spot coal. Youghiogheny inch and a quarter is being held at $1.45, mines. The spot market on all coals is equal to shipment quotations.

The local market has been relieved by West Virginia No. 8 being consigned to Buffalo. Factories are buying for immediate needs and will be closed over the holidays. This will

reduce the demand to a large extent the last of this week and most of next.

Prices for shipment are as follows:

	Pocahontas	Youghiogheny	Bergholz	Fairmount	W. Va. No. 8
Lump	$3.35	.....	.....	.....	.....
Lump, 6 in.	.....	.....	$2.45	.....	.....
Egg	3.35	.....	.....	.....	.....
Egg, 6 in.	.....	.....	2.10	.....	.....
Lump, 1¼ in.	.....	$2.45	2.25	.....	.....
Lump, ¾ in.	.....	2.30	2.10	$1.95@2.00	$1.95@2.00
Mine run	2.55	2.25	1.95	1.85@1 90	1.90
Slack	2.40	1.80@1.85	1.75	1.85	1.80

COKE

CONNELLSVILLE

Two big furnace coke contracts placed, practically winding up the contracting movement for the present, with 250,000 tons a month closed. Production and shipments about stationary.

Corrigan, McKinney & Co. have closed with W. J. Rainey for their entire furnace coke requirements for 1915, the understanding in the trade being that the price is $1.75. The firm is operating four furnaces, requiring about 40,000 tons a month, but has two idle furnaces that may be started later, making about 60,000 tons involved in the contract. The Youngstown Sheet & Tube Co. is understood to have practically closed for its coke, placing a contract for one active and one idle furnace with J. H. Hillman & Sons Co., and a similar contract with the Producers Coke Co. The idle furnaces are expected to be started within a few months, so that each contract involves 30,000 to 32,500 tons a month. The gossip in the trade is that the first named contract was at $1.75 and the other at $1.70.

With business already reported, the total contracts placed on this movement, during the past six weeks or so, is about 250,000 tons a month, mostly for the year 1915, but two contracts, on a sliding scale, run over two years, and a few are for first-quarter or first-half only. Nearly all the furnaces now operating have covered for their coke. The Pittsburgh Steel Co. has a twelvemonth contract with six months yet to run. There are many idle furnaces and these, of course, have been unable to contract. The market is quotable as follows: Prompt furnace, $1.60; contract furnace, $1.65, $1.70 and $1.75 respectively for three months, six months and one year; prompt foundry, $2@2.20; contract foundry (nominal, for best brands), $2.35@2.50, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Dec. 12 at 196,275 tons, an increase of 700 tons, and shipments at 200,058 tons, an increase of 3901 tons.

BUFFALO

The coke activity has been so long delayed that if it does not appear before long the trade will come to the conviction that it is not coming at all. Prices remain at what are apparently bottom figures, $4.25 for best 72-hr. Connellsville foundry and $3.30 for stock coke.

BALTIMORE

Coke is in poor call and sells in the Connellsville region to the trade here at from $1.75 to $1.90 for furnace, and around $2.45 for foundry. West Virginia furnace is quoted at $1.50 and foundry at $2.

CHICAGO

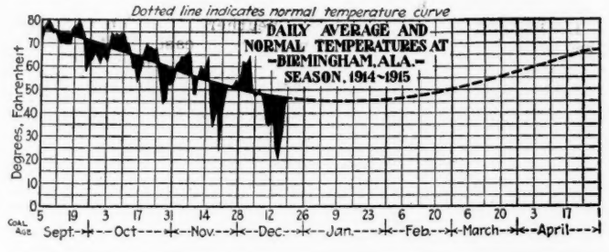
There has been considerable activity this week in the domestic trade sizes, and the market is stronger for furnace and foundry coke. Prices, however, are about at the same level as last week, as follows: Byproduct, $4.75@4.95; Connellsville, $4.75@5; Wise County 72-hr. (select), $5; gas coke, $4.25@4.50; furnace coke, $4.50@4.75.

SOUTHERN

LOUISVILLE

Market toned up appreciably in the past week.

Exceptionally cold weather, and a general easing up of labor conditions in the mining field, have done a good deal for the Kentucky coal market and operators are now looking forward to a good January business. Price quotations already show an advance on most grades, in some cases as much as fifteen or twenty cents a ton. The best grade block coals are selling around $1.85; block and lump $1.60; egg and nut, though hard to dispose of, from $1 to $1.25, while nut and slack ranges from 60 to 70c. for the better grades and around 40c. for the poorer, all prices f.o.b. mines.



MIDDLE WESTERN

CHICAGO

Cold wave stimulates trade. Mines on full-time schedules. Domestic demand stronger. Screenings still tending upward. Anthracite steady with fair buying.

The advent of freezing winter weather has greatly benefited local market conditions. The thermometer ranged around the zero mark for several days. Domestic buying showed an immediate better tone, and while the stocks in Chicago coal yards, which are unusually large at this time of the year, have not been depleted to any great extent as yet, the out-of-town purchases were considerable. Throughout Illinois and Indiana the mines have been working on full-time schedules during the past week. Householders, apartment and office buildings have been laying in considerable stocks of coal during the past few days, which has perceptibly added to the stronger undertone.

The steam trade shows betterment. Less domestic coal has been offered to steam buyers, and in addition some of them have been obliged to use fuel for heating purposes, resulting in generally increased consumption. Screenings are being absorbed rapidly, and prices are holding firm around 75c. to 80c., even in the face of a heavy increase in the output of fine coal due to better domestic demand.

There is a shortage here of chestnut anthracite, and the better demand recently has reduced the surplus of egg and stove sizes. Prices are firmly held at circular quotations.

Franklin County coals have shown an improvement this week, and operators are asking full circular prices. The demand for steam coal is particularly strong.

The country dealers favored Indiana operators with an increased number of orders for domestic coals, and the mines were able to make prompt shipments, being amply supplied with cars.

Smokeless coals have been fairly strong and all demurrage shipments have been eliminated.

Hocking grades have improved; surplus shipments have been moved and prices are generally on the circular basis.

West Virginia splint shipments have all been cleaned up, and no demurrage coal is now on hand. The country buying in these coals has been good.

Springfield screenings are at a high level, touching 85c. per ton in some cases. The demand for Springfield domestic sizes has been very active at good prices.

Eastern Kentucky coals have been in good demand, although prices have varied widely.

Prevailing quotations are as follows:

	Franklin Co.	Springfield	Sullivan	Clinton	Carterville
Lump	$1.50@1.75	$1.50	....	$1.50@1.60	$1.75
4-in. lump	....	....	$1.60@1.75	....	....
Steam lump	....	....	....	1.20	....
2½-in. lump	....	....	1.50	....	....
1¼-in. lump	....	....	1.35@1.50	....	....
Mine-run	1.15@1.25	....	....	1.10	....
Egg	1.40@1.60	....	....	1.50	....
No. 1 washed	....	....	....	....	1.60@1.75
No. 2 washed	....	....	....	....	1.50@1.75
6x3-in. egg	....	1.50	....	....	1.60@1.75
Nut	....	1.35	....	....	....
No. 1 nut	1.50@1.75	....	....	....	....
No. 2 nut	1.40@1.60	....	....	....	....
Screenings	0.80@0.85	0.75	0.70@0.85	0.70@0.80	....

	Harrisburg	E. Kentucky	N. Riv. & Poca.	Somerset	Hocking
Lump	$1.75	....	....	....	....
1¼-in. lump	....	....	....	....	$1.50@1.60
Lump and egg	....	....	$2.25	$2.25	....
Mine-run	1.20@1.30	....	1.40	1.40	1.25
Egg	1.60@1.75	1.50@1.75	....	....	....
No. 1 nut	1.75	....	....	....	....
No. 2 nut	1.40@1.60	....	....	....	....
Screenings	0.80@0.85	....	....	....	....

ST. LOUIS

Stimulating effects of cold weather have passed off. Screenings continue the feature of the market. Influence of the 5% rate decision.

During the few days of cold weather prices on domestic sizes advanced 10 or 15c. a ton in many cases, but the rise was not warranted and the market is back to the level of the past few weeks. Even if the weather is cold through Christmas week, it will hardly cause any change in domestic prices. Steam sizes are in good demand, with screenings from 70 to 80c., and Nos. 2, 3 and 4 nut are hard to get, while premiums are the rule in both fields. Washed coal shows some improvement.

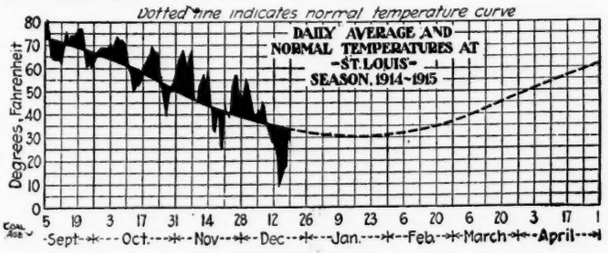
In the Standard field 2-in. lump has been down as low as 90c., with the average at $1. This on account of the extraordinary demand for screenings, which find a ready market at 55 to 60c., and indications are that they will go higher.

There is nothing moving in the way of anthracite or smokeless.

The 5% increase in freight rates has made the outlook brighter now than for many months. St. Louis being the center of a great manufacturing district will be benefited to a great extent. Activity in many industries that consume a large tonnage of coal is expected after the first of the year.

Market is quotable on the following basis:

	Williamson and Franklin Co.	Big Muddy	Mt. Olive	Standard	Sparta
2-in. lump	.....	....	$1.25	$0.95@1.05	$1.10
3-in. lump	.....	....	1.40	....	.....
6-in. lump	$1.30@1.50	....	1.50	1.15@1.25	1.25
Lump and egg	1.85@2.15	$2.25	.....	....	1.35
No. 1 nut	1.15@1.35	....	.....	0.90@0.95	.....
Screenings	0.50@0.55	....	0.80@0.85	0.55@0.60	0.60
Mine-run	1.00@1.10	....	.....	0.85@0.90	.....
No. 1 washed nut	1.50@1.60	2.00	1.60	....	.....
No. 2 washed nut	1.25@1.30	....	1.45	....	.....
No. 3 washed nut	1.10@1.15	....	.....	....	.....
No. 4 washed nut	1.10@1.15	....	.....	....	.....
No. 5 washed nut	0.75@0.80	....	.....	....	.....



INDIANAPOLIS

Cold weather has caused an improvement. Mines on better time and more men at work. Slack selling at full prices and all the output covered. Railroad buying slightly larger.

With snow on the ground and the railroad rate increase in effect, there is a better feeling in the coal industry. The first, accompanied by temperature that went below zero, made the immediate demand for domestic and steam coal better with the result that running schedules have been increased, and there are more miners at work than for several weeks; some companies would now be making full time were it not for a shortage of hopper cars.

Slack is in good demand and quite easily disposed of at 80c.; operators are of the opinion that the strength is due to increased orders rather than to a shortened supply. They believe they see an improvement in industrial conditions and they expect this to increase, following the railroad rate decision. In the block field, small mines have profited from the short running time or shut-downs at the big mines, slopes and gin shafts getting the local trade. There has been some cutting of prices, best quality selling at $1.80 to $2.60 a ton as against the usual $2.75.

KANSAS CITY

Seasonably cold weather and snow have stimulated orders. Prices are firming up.

The advent of winter weather has resulted in moving much of the large accumulations and there is no coal now on demurrage, while all grades are strong. There has been no change in price lists, but coal is generally selling higher than during the previous three or four weeks. While no definite announcements have been made, it is expected that coal companies will advance prices the first of the year. Domestic deliveries have been hampered by heavy snows. Kansas slack has been the feature of the market for the week, and at times the demand overtook the supply. Illinois coal remains weak.

Prices are now quotable on the following basis: Missouri lump, $2.25; Illinois lump, $1.75; egg, $1.50; nut, $1.50; Kansas lump, $2.25; nut, $2.10; slack, $1.40; mill, $1.65.

PORTLAND, ORE.

First cargo of anthracite via Panama Canal is now en route. Colder weather stimulates business.

The first cargo of anthracite coal to come to Portland from the Atlantic coast by way of the Panama Canal is now en route, the American steamer "Cricket" having sailed from Philadelphia for the Columbia River Dec. 1. The coal is expected to arrive here the latter part of this month. It is all egg size and will be retailed at from $14 to $15 per ton. Heretofore, egg anthracite of this kind has commanded from $18 to $20 per ton, so that the water freight rate will reduce the cost about $5 per ton, which, it is believed, will mean a considerable increase in the demand. This will probably be the only shipment to come here this winer from the Atlantic coast, but a large movement is anticipated next season, when the opening of the Celile Canal in the Columbia River will enable the trans-shipment of coal on barges into the Inland Empire, where the consumption of coal is about six times as large as here. The canal, which will remove the obstructions to navigation in the upper Columbia, is expected to be open for traffic next year without fail. As a result of this reduction on anthracite, the Western roads may reduce their freight rates from the mines in Washington, Utah and Wyoming to this district. This in turn would be followed by lower prices all around and an increase in the coal consumption.

During the past week the temperature droped sharply, and as a result the coal business was stimulated considerably.

PRODUCTION AND TRANSPORTATION STATISTICS

IMPORTS AND EXPORTS

The following is a comparative statement of imports and exports of the United States for October, 1913-14, and for the ten months ending October, 1912-13-14, in long tons:

	10 Months			October	
Imports from:	1912	1913	1914	1913	1914
United Kingdom	4,864	5,259	8,672	662	262
Canada	1,169,702	897,489	840,447	69,476	69,289
Japan	20,718	89,115	50,099	10,040	5,560
Australia and Tasmania	140,502	141,578	187,537	20,192	23,213
Other countries	2,105	3,296	2,053	480	.....
Total	1,337,891	1,136,737	1,088,608	100,850	98,324
Exports:					
Anthracite					
Canada	2,971,546	3,540,336	3,351,569	420,814	334,411
Brazil	.....	.....	6	.....	.....
Other countries	61,145	58,007	54,916	4,527	10,023
Total	3,032,691	3,598,343	3,406,491	425,341	344,434
Bituminous					
Canada	8,907,968	11,662,469	8,221,467	1,378,471	979,611
Panama	396,227	419,680	239,837	32,098	25,706
Mexico	256,657	417,262	289,259	19,509	31,879
Cuba	943,262	1,111,573	908,324	128,181	114,426
West Indies	563,948	524,260	510,167	59,615	30,272
Argentina	.....	61,877	207,904	6,000	14,118
Brazil	.....	241,099	235,453	30,054	34,382
Uruguay	.....	5,163	71,819	.....	10,376
Other countries	1,327,714	1,100,273	1,570,527	95,765	111,207
Total	12,395,776	15,543,656	12,254,757	1,749,693	1,351,977
Bunker coal	6,151,280	6,483,020	6,285,770	719,436	573,822

SOUTHWESTERN TONNAGE

The following is a comparative statement of the Southwestern tonnage for June and the three months of the years 1913 and 1914:

	April		May		June	
State	1913	1914	1913	1914	1913	1914
Missouri	204,255	179,723	186,366	165,395	187,723	185,731
Kansas	444,142	378,192	407,124	370,097	412,371	490,561
Arkansas	136,153	87,002	130,020	95,749	145,306	133,350
Oklahoma	246,155	239,443	252,901	241,180	255,481	273,692
Totals	1,030,705	884,360	976,411	872,421	1,000,881	1,083,334

This statement only covers the tonnage of members of the association, which is estimated to be at least 95% of the entire production.

CHESAPEAKE & OHIO RY.

The following is a comparative statement of the coal and coke traffic from the New River, Kanawha and Kentucky districts for October and the four months of the fiscal years 1913 and 1914, in short tons:

	October			Four Months		
Destination	1914	%	1913	%	1914	%	1913	%
Tidewater	377,280	19	238,780	15	1,362,981	17	1,058,046	17
East	235,818	12	229,018	15	844,711	11	781,628	13
West	1,326,240	65	9 3,183	63	5,225,134	66	3,939,842	63
Total	1,939.338		1,460,981		7,432,826		5,779,516	

From Connections								
Bituminous	87,266	4	109,091	7	502,111	6	427,821	7
Anthracite	1,274		1,645		6,544		6,464	
Total	2,027,878	100	1,571,717	100	7,941,481	100	6,213,801	100
Coke	8,713		33,035		68,366		119,383	

BITUMINOUS COAL MOVEMENT

The following is a summary of the movement of coal and coke over 13 principal railroads during August and the first eight months of the last two years, in short tons:

	August		8 Months	
Anthracite	1913	1914	1913	1914
Baltimore & Ohio[1]	94,702	84,737	933,805	868,744
Chesapeake & Ohio[1]	1,642	1,866	11,988	10,637
Erie[2]	769,423	828,318	5,739,611	6,100,421
Pennsylvania[1 3]	713,451	805,585	6,851,626	7,153,407
Virginian[2 1]	.....	27	809	248
Total 5 roads	1,579,218	1,720,533	13,537,839	14,133,457
Bituminous				
Baltimore & Ohio[1]	3,456,089	2,922,802	24,101,535	21,896,284
Buffalo, Roch. & P.[1 2]	833,388	842,991	6,201,264	5,339,956
Buffalo & Susq.[1 2]	155,375	128,298	1,206,526	777,404
Chesapeake & Ohio[1]	1,665,525	2,104,217	11,036,996	13,576,576
Erie[2]	9,872	5,418	293,740	52,250
Hunt. & Br'd T. Mt.[1 2]	108,975	82,043	894,913	681,287
New York Central[2]	763,112	678,572	5,953,578	5,322,584
Norfolk & Western[1 2]	2,250,079	2,450,808	15,825,423	17,470,191
Pennsylvania[1 3]	4,562,339	4,299,810	33,396,286	31,821,349
Pitts. & Lake Erie[1 2]	1,154,219	1,095,211	8,585,935	7,651,429
Pitts. Shaw. & North[1 2]	239,808	169,525	1,798,320	1,512,079
Virginian[1 2]	376,083	361,906	2,898,742	2,675,980
Western Maryland	312,053	255,586	2,271,229	2,047,766
Total 13 roads	15,886,917	15,397,187	114,464,487	110,825,135
Coke				
Baltimore & Ohio[1]	391,999	242,283	3,221,370	2,337,794
Buffalo, Roch. & P.[1 2]	36,220	21,647	376,107	185,446
Buffalo & Susq.[1 2]	20,006	40,725	200,032	249,362
Chesapeake & Ohio[1]	26,723	21,181	237,206	253,969
New York Central[2]	.....	.....	36,207	.....
Norfolk & Western[1 2]	108,158	79,156	1,059,509	748,331
Pennsylvania[1 3]	1,161,484	792,656	9,731,462	6,867,676
Pitts. & Lake Erie[1 2]	537,557	418,471	4,656,960	3,523,446
Pitts. Shaw. & North[1 2]	.....	.....	9,383	.....
Western Maryland	8,822	6,614	53,232	48,610
Total 10 roads	2,290,969	1,622,733	19,581,468	14,214,634

Total Coal and Coke 13 Roads	1913	1914
January	19,314,523	18,157,998
February	17,594,079	15,446,830
March	17,672,305	20,233,213
April	16,882,326	15,497,444
May	19,015,721	16,523,385
June	18,610,757	16,984,476
July	18,736,979	17,589,427
August	19,757,104	18,740,453
Total, 8 months	147,583,794	139,173,226

[1] Includes coal received from connecting lines.
[2] Includes company's coal.
[3] Does not include company's coal hauled free.

Note:—The Southern Railway hauled 316,945 short tons of bituminous coal during July, 1914, and 2,264,415 short tons during the seven months ending July 31, 1914.

Coal Contracts Pending

Contracts listed in this department are authoritative in every respect except where the source of information is questionable, in which event it is noted. All contracts are listed promptly on receipt and only repeated when additional information becomes available or in the last issue previous to the day on which bids will be closed. Liberal remuneration will be paid for all legitimate notices of this kind sent in.

Contract No. 14—Panama, C. Z.—This contract (pp. 814, 854, 892, 933), which calls for furnishing all or any part of the requirements of the Panama R.R. Co., estimated at 500,000 tons of coal, has been awarded to William C. Atwater & Co., Inc., 1 Broadway, New York. The bid of this company was for 350,000 tons of Pocahontas semi-bituminous steam coal, at $2.70, delivery to be made at Lambert's Point (at the option of the Panama R.R. as to an increase in the amount to be supplied). From a report of the Bureau of Mines, Washington, D. C., is stated that this bid—the cost being figured on a basis of 1,000,000 B.t.u.—was the lowest submitted. The coal is to be taken from the Thelma and Nora mines of the Virginia Pocahontas Coal Co. at Colwood, McDowell County, W. Va.; also from Mine No. 1 of the Lake Superior Coal Co. near Huger, McDowell County, W. Va. Address R. E. Rutherford, Assistant Purchasing Officer, Panama Purchasing Department, 24 State St., New York.

Contract No. 20—New York—This contract (pp. 892, 933, 972), which provides for furnishing and delivering 300 gross tons buckwheat coal No. 1, has been awarded to Joseph P. O'Connor, at $3.66 per ton. Address Auditor, 400 East 29th St., Borough of Manhattan.

Contract No. 22—Philadelphia, Penn.—The date for receiving bids on this contract (pp. 933, 952, 1009) has again been extended to 12 o'clock noon, Dec. 24. This action was taken in order to provide the prospective bidders with an opportunity to make due allowances for the new freight rate schedule recently put into effect by the State Commerce Commission. Press reports are to the effect that this contract involves 140,500 tons of anthracite, and 269,000 tons of bituminous coal, and that the gross consideration will aggregate more than $1,000,000. Address Director Loeb, Room 225, City Hall, Philadelphia, Penn.

Contract No. 32—New York—The bids on this contract (p. 1009), which provide for furnishing, delivering, storing and trimming coal in the Borough of Queens, were as follows: Smith, Lineaweaver & Co., $14,015; Charles B. Norton & Co., $13,400; John W. Peale, $13,540; Meeker & Co., $15,545; Burns Bros., $14,280; George D. Harris, $13,700. Address William Williams, Commisisoner, Department of Water Supply, Gas & Electricity, Room 2351, Municipal Building, Manhattan.

Contract No. 35—New York—Sealed bids will be received by the Board of Trustees, Bellevue Hospital, until 3 p.m., Dec. 31, for furnishing fuel supplies under specification No. 2. The surety required will be 30% of the total amount of the bid, and a deposit of 1½% shall accompany each bid. The time for completing this contract shall be from Jan. 1 to Mar. 31, 1915. Blank forms and further information can be obtained on application to the Auditor, 400 East 29 St., Borough of Manhattan.

Contract No. 36—Pittsburgh, Penn.—Bids are requested for furnishing the penitentiary with its fuel supply for one year from Jan. 1, 1915. Bids will be open Saturday, Dec. 26. The board reserves the right to reject any and all bids. Address, John Francies, Warden, Western Penitentiary of Pennsylvania, Pittsburgh, Penn.

Contract No. 36—New York—Sealed bids are requested by the Department of Corrections, until 11 a.m., Dec. 30, for furnishing and delivering anthracite and semi-bituminous coal. The amount of security required is 30% of the amount of the bid, and deliveries are to be completed before Jan. 15, 1915. Blank forms and further information may be obtained at the office of the Department of Corrections, Municipal Building, Borough of Manhattan.

Contract No. 37—New York—Sealed bids will be received, until 10.30 a.m., Dec. 28, for furnishing and delivering bituminous coal at the Fire Department buildings as follows: Manhattan, 150 tons; Brooklyn, 150 tons; Bronx, 75 tons; Richmond, 25 tons. The amount of security required is 30% of the amount of the bid, and the time for completion of the contract is Dec. 31, 1915. Blank forms and further information may be obtained at the office of the Fire Department, 11th floor, Municipal Building, Manhattan. Robert Adamson is fire commissioner.

Contract No. 38—Hamilton, N. J.—Bids are requested for furnishing the pumping station of the Standard Oil Co. with 5000 tons of No. 1 buckwheat coal for delivery during the year 1915, in equal monthly proportions. Proposals will be received until December 28, 1914. Address J. L. Hutchison, Coal Purchasing Agent, 26 Broadway, New York City.

FOREIGN MARKETS

GREAT BRITAIN

Dec. 11—Tonnage is arriving more freely and there is a rather steadier tendency in regard to all classes of coal. Quotations are approximately as follows:

Best Welsh steam	$4.80@5.04	Best Monmouthshires	$3.96@4.02
Best seconds	4.32@4.56	Seconds	3.84@3.90
Seconds	4.08@4.20	Best Cardiff smalls	2.70@2.72
Best dry coals	4.32@4.56	Cargo smalls	1.56@1.80

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport, both net, exclusive of wharfage and for cash payment.

Freights—Tonnage is offering more freely, but loading turns are becoming difficult to arrange. Rates are approximately as follows:

Gibraltar	$3.00	Venice, Ancona	$5.22	Singapore	$5.28
Malta	3.24	Alexandria	4.68	Las Palmas	2.88
Marseille	4.06	Port Said	5.04	St. Vincent	3.12
Algiers	4.29	Aden	5.04	Rio Janeiro	3.90
Genoa, Savona	4.08	Colombo	5.16	Monte Video	3.48
Naples	3.96	Sabang	5.04	River Plate	3 72